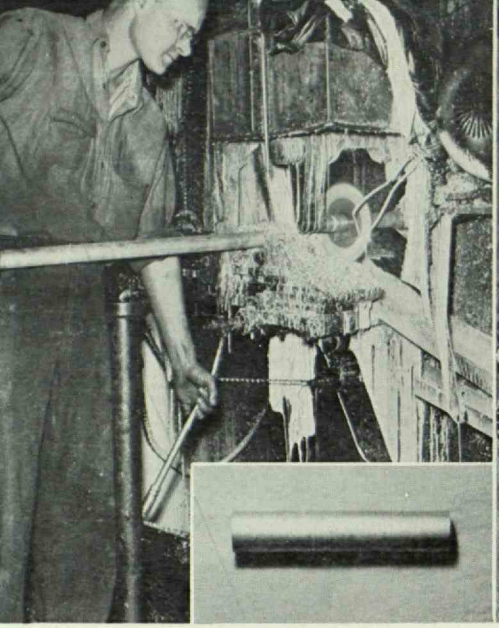
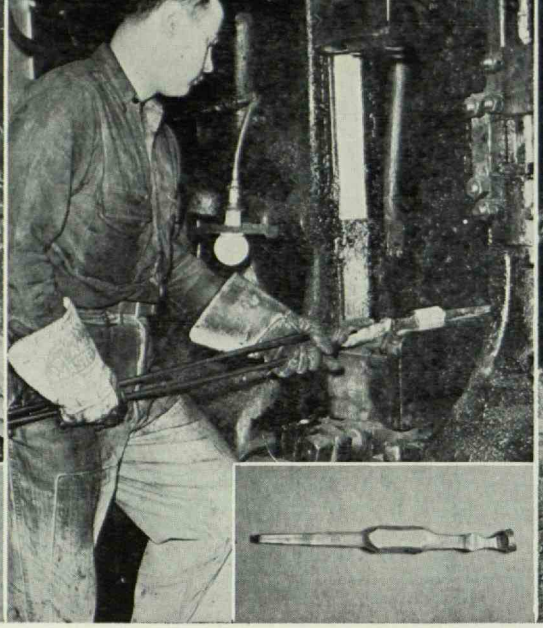
# TECHNOLOGY REVIEW

May 1949

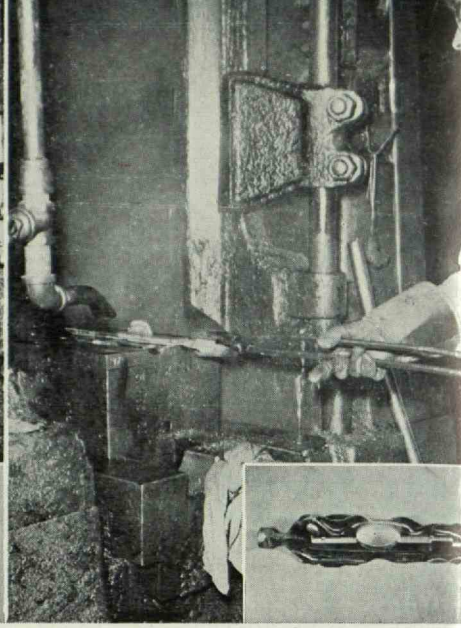
technology
review
Published by MIT



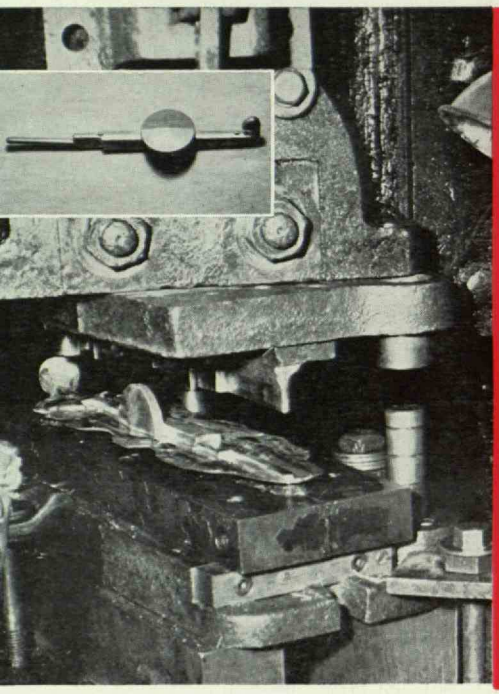
Cutting Bar



Lengthening and Shaping



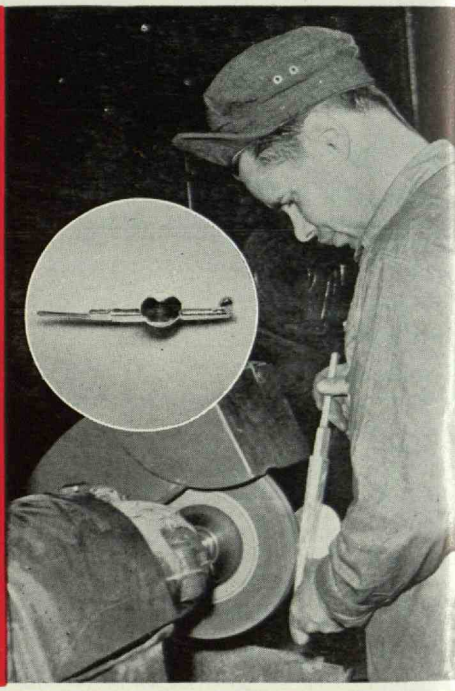
Shaping to the Die



Trimming the Flash

# FORGING ALUMINUM

## into Pressure Cooker Tops



Finishing and Polishing

# The Harvey Metal Corporation

*HAROLD B. HARVEY '05*

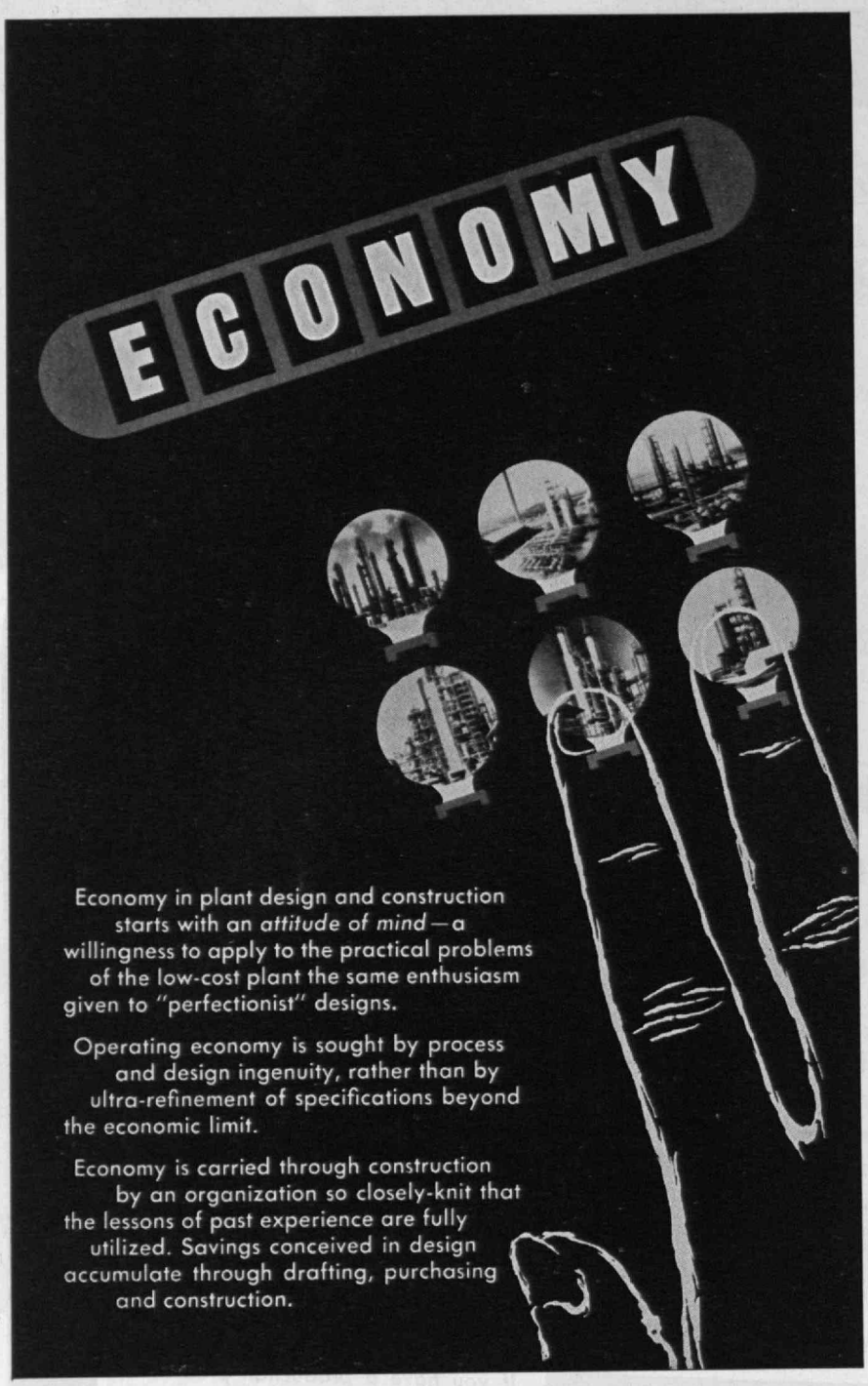
## *Engineers and Manufacturers*

74th Street and Ashland Avenue — Chicago 36, Illinois

*FORGINGS IN ALUMINUM — BRASS — BRONZE — COPPER — MAGNESIUM — MONEL — ALLOYS*

*MACHINING FACILITIES*

THE TECHNOLOGY REVIEW, May, 1949. Vol. LI, No. 7. Published monthly from November to July inclusive at 8 Harmony Place, Brattleboro, Vt. Publication date: twenty-seventh of the month preceding date of issue. Annual subscription $3.50; Canadian and Foreign subscription $4.00. Entered as second-class matter at the Post Office at Brattleboro, Vt., under the Act of March 3, 1879.




Economy in plant design and construction starts with an *attitude of mind*—a willingness to apply to the practical problems of the low-cost plant the same enthusiasm given to "perfectionist" designs.

Operating economy is sought by process and design ingenuity, rather than by ultra-refinement of specifications beyond the economic limit.

Economy is carried through construction by an organization so closely-knit that the lessons of past experience are fully utilized. Savings conceived in design accumulate through drafting, purchasing and construction.

## ECONOMY by prototype—

Time, rather than money, was the major concern when the first of these wartime butadiene plants was built. Successful in design and operation, it was the prototype for two additional plants, saving *both* time and money in construction. All have exceptional records of low operating cost.

## ECONOMY by experience—

In furnishing plants for the production of ethlyene, Lummus has combined its petroleum and chemical plant experience. High yields and low product cost per dollar of investment have been obtained, along with wide-range flexibility as to charge stock composition. Total capacity of Lummus ethylene plants is now some half-million pounds per day.

## ECONOMY by expediency—

This smaller customer had rigid limits of first cost for its lube oil plant. Lummus accepted the challenge—the design was developed to permit use of existing and rebuilt equipment—located and purchased by Lummus for the job. This plant was completed exactly on schedule, and neutrals of zero pour test were ready for shipment on the second day of operation.

**THE LUMMUS COMPANY**
**420 Lexington Avenue, New York 17, N. Y.**

# LUMMUS

**CHICAGO**—600 South Michigan Avenue, Chicago 5, Ill.
**HOUSTON**—Mellie Esperson Bldg., Houston 2, Texas

The Lummus Company, Ltd.
525 Oxford St., London, W-1, England

Société Française des Techniques Lummus
39 Rue Cambon, Paris 1er, France

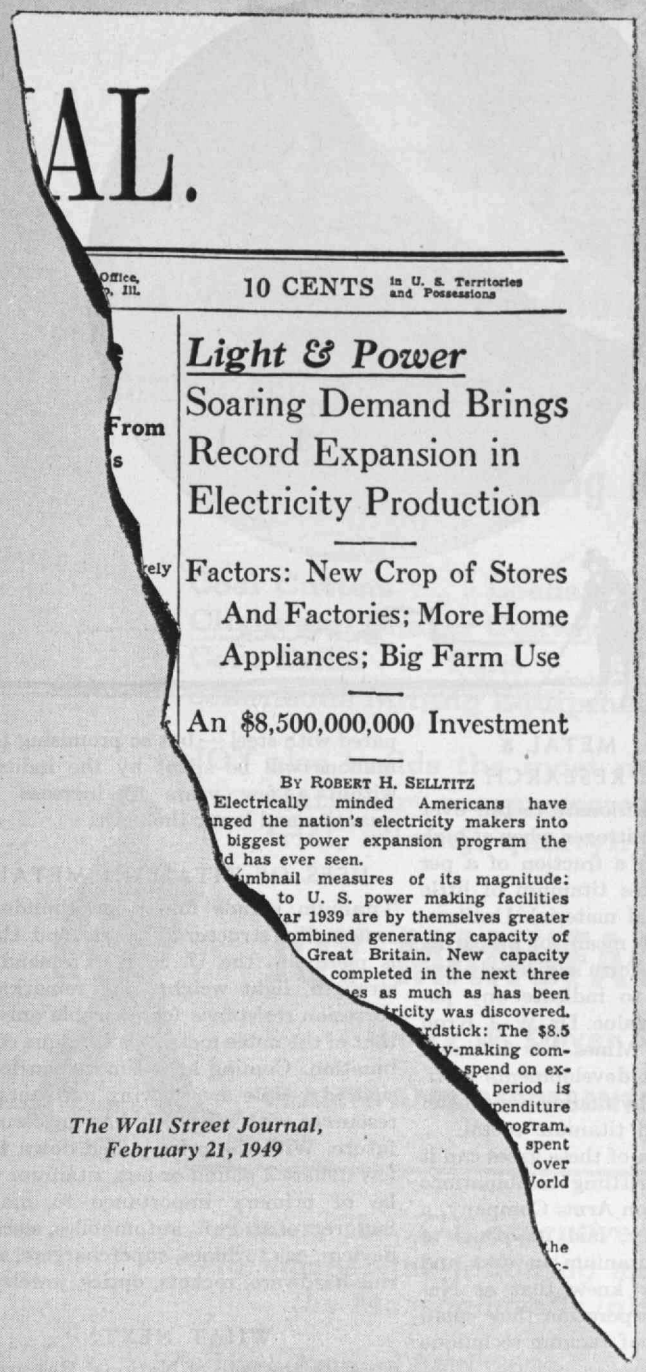
Compañia Anónima Venezolana Lummus
Edifico "Las Gradillas"
Esquina Las Gradillas, Caracas, Venezuela

NATIONAL CONSTRUCTORS ASSOCIATION — OIL STEEL CHEMICAL

**Fulfillment**
**Teamwork**

**designs and builds with ECONOMY**

**Resourcefulness**
**Perspective**
**Technique**



AL.

Office, Ill. 10 CENTS in U. S. Territories and Possessions

*Light & Power*

Soaring Demand Brings Record Expansion in Electricity Production

Factors: New Crop of Stores And Factories; More Home Appliances; Big Farm Use

An $8,500,000,000 Investment

By Robert H. Selltitz

Electrically minded Americans have nged the nation's electricity makers into biggest power expansion program the d has ever seen.

umbnail measures of its magnitude: to U. S. power making facilities ar 1939 are by themselves greater ombined generating capacity of Great Britain. New capacity completed in the next three es as much as has been tricity was discovered. rdstick: The $8.5 y-making com- spend on ex- period is penditure rogram. spent over Vorld

the

*The Wall Street Journal, February 21, 1949*

# 10%

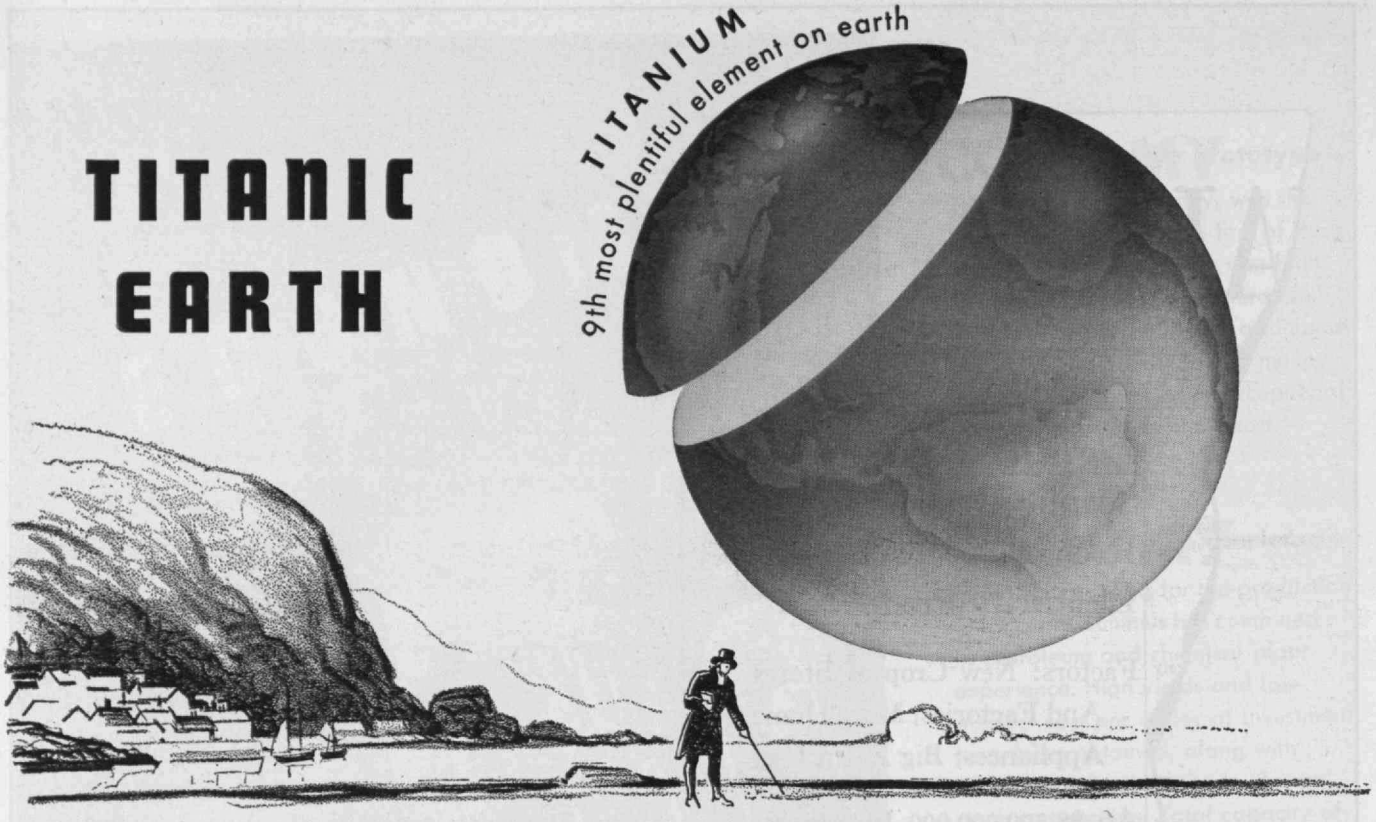
The power generating facilities designed and constructed by Stone & Webster Engineering Corporation through the years total over 6,000,000 kilowatts, equivalent to one-tenth of the total generating capacity of all electrical utilities in the United States.

Work of the Corporation currently in progress for leaders in the industrial and public utilities field in all parts of the country will increase this total over 2,000,000 kilowatts.

## STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.

# TITANIC EARTH




## TITANIUM DISCOVERED

Back in 1791 an English clergyman, William Gregor, who liked to stroll and think on the beaches of Cornwall, became curious about the black sand he saw there. This gentleman of the cloth was also an amateur chemist and in this sand he discovered a new element. Almost coincidentally an Austrian named Heinrich Klaproth (also discoverer of uranium and zirconium) extracted the same thing from rutile and named it "Titanic Earth" for the mythical Titans. Hence our name Titanium.

Thereafter titanium was found in various places including the Ilmen Mountains of Russia (ilmenite) but although it is the ninth element in order of earthly abundance, it remained a mere laboratory curiosity until 1908.

## TITANIUM OXIDE

At that time Dr. A. J. Rossi, expert in the reduction of metals, mixed titanium oxide with salad oil to make a white paint. In another 10 years a pure oxide was being produced which quickly won success as a pigment. Paint, false teeth, face powder, tires, shoes, glassware, textiles, inks, plastics, paper consumed an increasing tonnage of titanium oxide but still the pure metal was beyond industry's reach.

## TITANIUM METAL & NATIONAL RESEARCH

Titanium is an affectionate metal, over fond of oxygen and nitrogen when at high temperatures. Even a fraction of a per cent of either makes titanium of little value as a structural material. Until recently there was no means of preparing titanium metal in a form sufficiently free of these elements to indicate any potential commercial value. Dr. W. J. Kroll of the Bureau of Mines has initiated many of the recent developments in titanium metallurgy by finding a means of preparing powdered titanium metal.

Only by exclusion of these gases can it be kept from embrittling combinations and when Remington Arms Company, a Du Pont subsidiary, laid its plans to produce metallic titanium in cast and rolled shapes, they knew that at National Research Corporation they could find the knowledge of vacuum technique that they needed.

The melting and casting of titanium was a natural for National Research. We planned the process, designed the equipment and installed it. Today this National Research Corporation pilot equipment is handling the highest quality of commercial metal — not much compared with aluminum — nothing at all compared with steel — but so promising that millions will be spent by the industry within a few years to increase the quantity and lower the price.

## USES OF TITANIUM METAL

Titanium stands fourth in abundance among the structural metals and there is plenty in the U. S. A. Tremendous strength, light weight, and remarkable corrosion resistance (comparable only to that of the noble metals) is a unique combination. Coming at a time when long-sighted people are viewing our metallic resources with alarm, it has an assured future. With the price pulled down to a few dollars a pound or less, titanium will be of primary importance to manufacturers of aircraft, automobiles, electric devices, gas turbines, superchargers, marine hardware, rockets, optics, jewelry.

## WHAT NEXT?

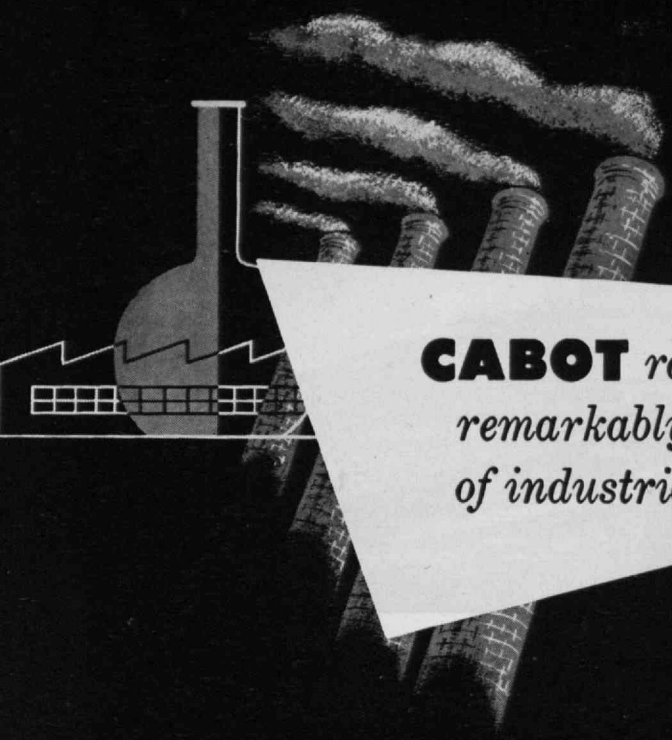
So, with the help of National Research's high vacuum know-how, another material has been taken from the test tube to the factory. Where else can good men and ideas help — where can they help you? At National Research the best in brains, organization, equipment, and an unequalled accumulation of unique experience are available.

INDUSTRIAL RESEARCH PROCESS DEVELOPMENT
HIGH VACUUM ENGINEERING & EQUIPMENT
Metallurgy — Dehydration — Distillation — Coating — Applied Physics

# NATIONAL RESEARCH CORPORATION

SEVENTY MEMORIAL DRIVE CAMBRIDGE, MASSACHUSETTS

In the United Kingdom, BRITISH-AMERICAN RESEARCH, LTD., London S.W 7, England—Glasgow S.W 2, Scotland



**CABOT** *raw materials meet a remarkably diversified list of industrial needs.*

## CARBON BLACK

*for the Rubber Ink Paint Varnish Lacquer Plastics and Paper Industries*

## PINE DISTILLATES

*for the Rubber Naval Stores and Paint Industries*

## CHARCOAL

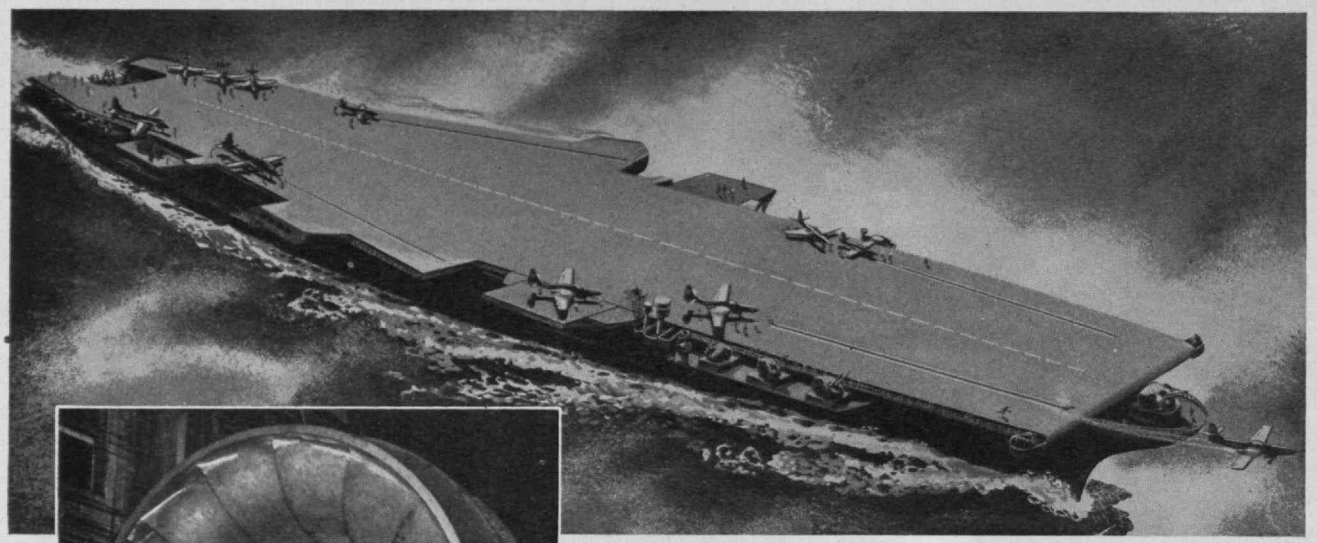
*for the Metallurgical Mining Chemical Poultry and Tobacco Curing Industries*

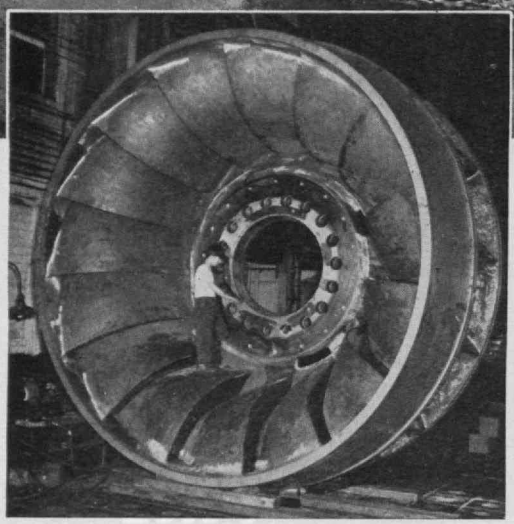
**CABOT** raw materials reach these and other varied industries along a route which begins at research and development, and continues through production to the manufacturer Cabot serves.

**GODFREY L. CABOT, INC.**

77 FRANKLIN STREET, BOSTON 10, MASS.

# THE WORLD'S LARGEST SHIP...





# THE WORLD'S MOST POWERFUL HYDRAULIC TURBINE

C. L. Bartlett '11
H. T. Bent '14
S. B. Besse '26
J. P. Comstock '19
H. W. Curtis '44
J. D. Deal, Jr. '47
G. S. Donnan '36
S. A. Face, Jr. '47
H. A. Finkel '48
R. F. Flaxington '26
J. M. Gilliss '38
C. H. Hancock '34
E. F. Hewins '16
D. A. Holden '31
J. R. Kane '40
A. A. Levingston '49
G. C. Mason '08
N. E. Oresko '29
W. N. Parks '34
L. B. Peterson '27
N. L. Rawlings '21
E. B. Rowe, Jr. '36
M. L. Sellers '31
L. R. Sorenson '19
R. N. Taylor '46
R. W. Tucker '39
E. L. Wildner '25
J. B. Woodward, Jr. '13

An emotion of pride and achievement is attained with the design and building of a great ship or giant hydraulic turbine. Even more satisfying is this feeling when these products are the world's largest or most powerful. Included in the current back-log of almost $200,000,000 at Newport News are the 1090-foot Aircraft Carrier, UNITED STATES, and nine 165,000 h.p. hydraulic turbines for Grand Coulee Dam, the world's greatest hydro-electric development.

In addition to these primary products paper making, rayon, wool carding machinery, and numerous other products are being built at Newport News.

Included in the Yard's 11,000 employees are twenty-eight graduates of M.I.T. Many of these alumni, starting with the President and General Manager, hold positions of high responsibility.

**NEWPORT NEWS SHIPBUILDING & DRY DOCK COMPANY**
**NEWPORT NEWS, VIRGINIA**

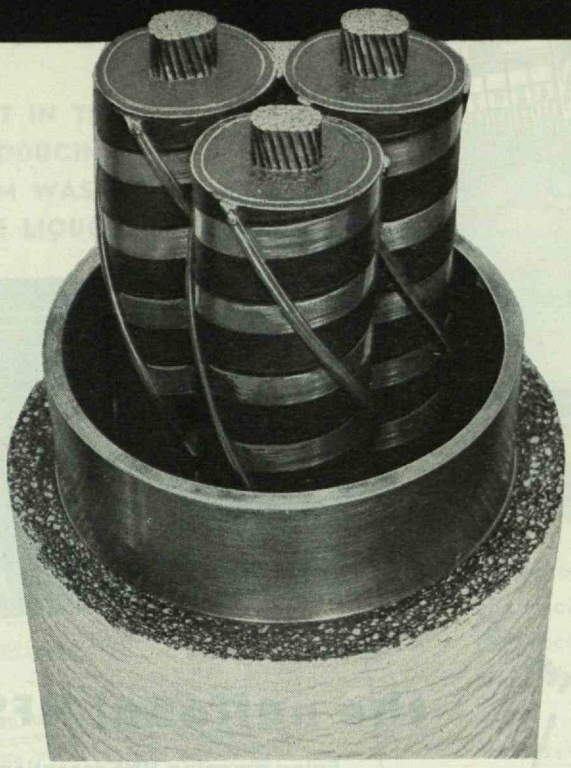
# *High Voltage* HABIRLENE SHEATHED COMPRESSION CABLE SYSTEM...

**RELIABLE**

**SIMPLE**

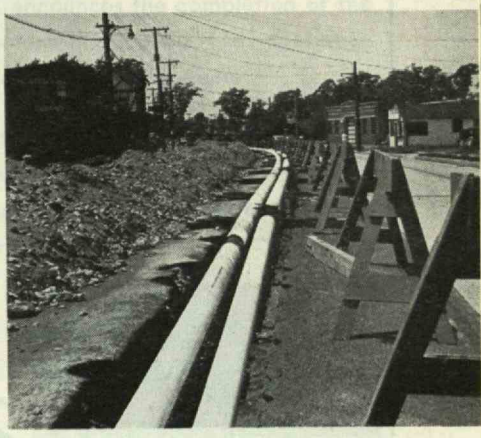
**ECONOMICAL**

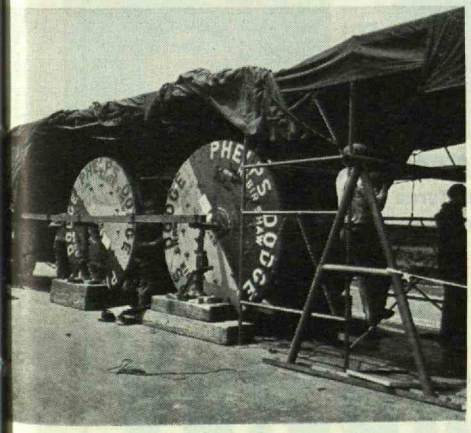
**EFFICIENT**

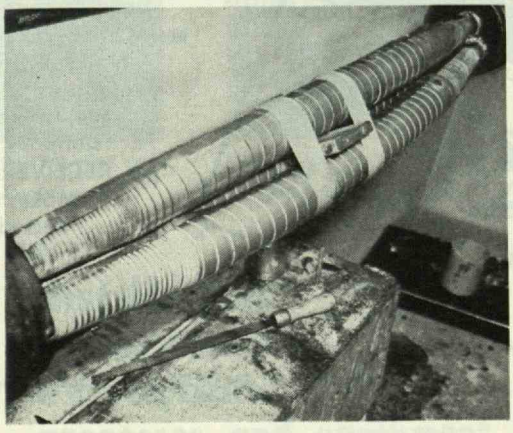


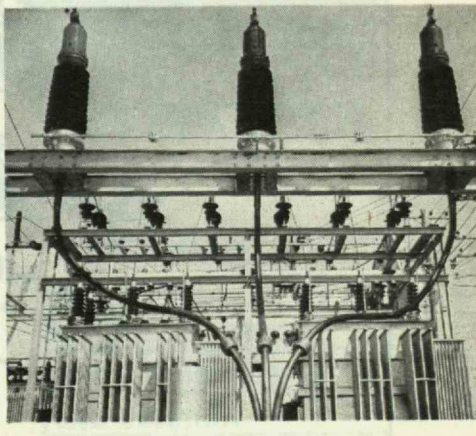
. . . Three insulated copper conductors with bronze reinforced **HABIRLENE SHEATH** are pulled into a steel pipe line laid under the streets. The pipe is filled with gas or oil under pressure.

PHELPS DODGE COPPER PRODUCTS CORPORATION — P D — REG U S PAT OFF









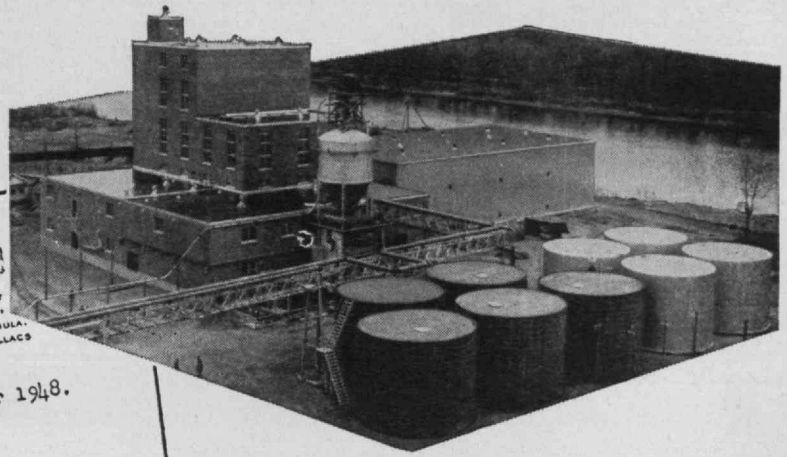
## PHELPS DODGE COPPER PRODUCTS CORPORATION

General Sales Offices: 40 WALL STREET, NEW YORK 5, N. Y.

Mills: BAYWAY, N. J. YONKERS, N. Y. FORT WAYNE, IND. LOS ANGELES, CALIF.

# from Idea to Operation

**LARGEST PLANT IN THE WORLD PRODUCING ALCOHOL FROM WASTE SULPHITE LIQUOR**



COMMERCIAL ALCOHOLS LIMITED

CABLE ADDRESS "COMALCOLIM" TELEPHONE FRONTENAC 4311

3176 NOTRE DAME STREET EAST MONTREAL 4, CANADA.

SUPER-PYRO ANT PURE AND DENATURED ETH 85% MAGNESIA INSULA BLEACHED SHELLACS

31st December 1948.

Vickers-Vulcan Process
Engineering Co. Limited,
Box 550, Place d'Armes,
Montreal, Que.

Re: Gatineau Distillery

Dear Sirs:

We wish to congratulate your organization on the successful completion of our Gatineau distillery. We believe your company has achieved an outstanding record in designing and building this plant. It will therefore be appreciated if you will extend to all members of your staff our sincere thanks and good wishes for the New Year. We wish you continued success in 1949 and the years to come.

Yours very truly,

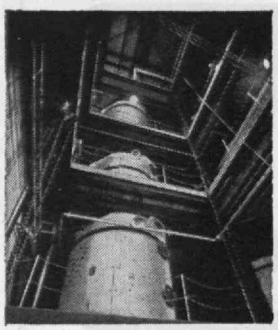
COMMERCIAL ALCOHOLS LIMITED

C. G. Kertland
President

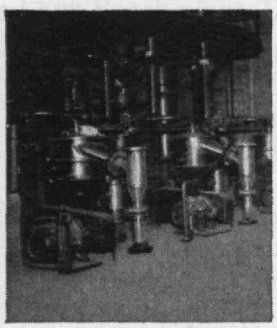
CGK:WM

Under one all-embracing engineering and construction contract covering every phase of process development, equipment and plant design, construction and initial operation . . . Vulcan's Canadian affiliate — Vickers-Vulcan Process Engineering Company, Ltd. announces the completion of the new Commercial Alcohols Ltd. Gatineau Distillery, at Gatineau, Quebec.

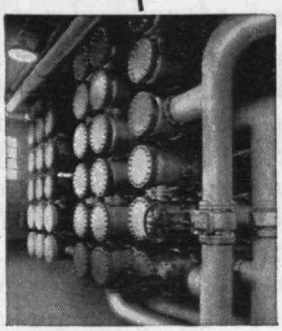
This is a typical example of the complete engineering service that VULCAN is offering the chemical process industries throughout the world.



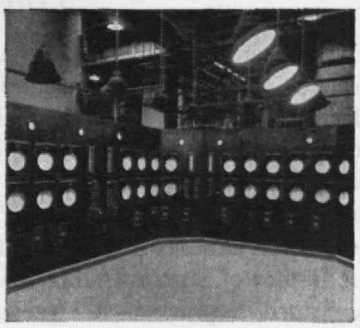
One of the six columns erected as part of the Vulcan Vapor Re-use Distillation System.



A section of the Plant where yeast is continuously recovered from the fermented sulphite liquor.



Stainless Steel Heat Exchangers for cooling the waste sulphite liquor to fermentation temperature.



Instrument Panel for automatic control of the Distillation System.

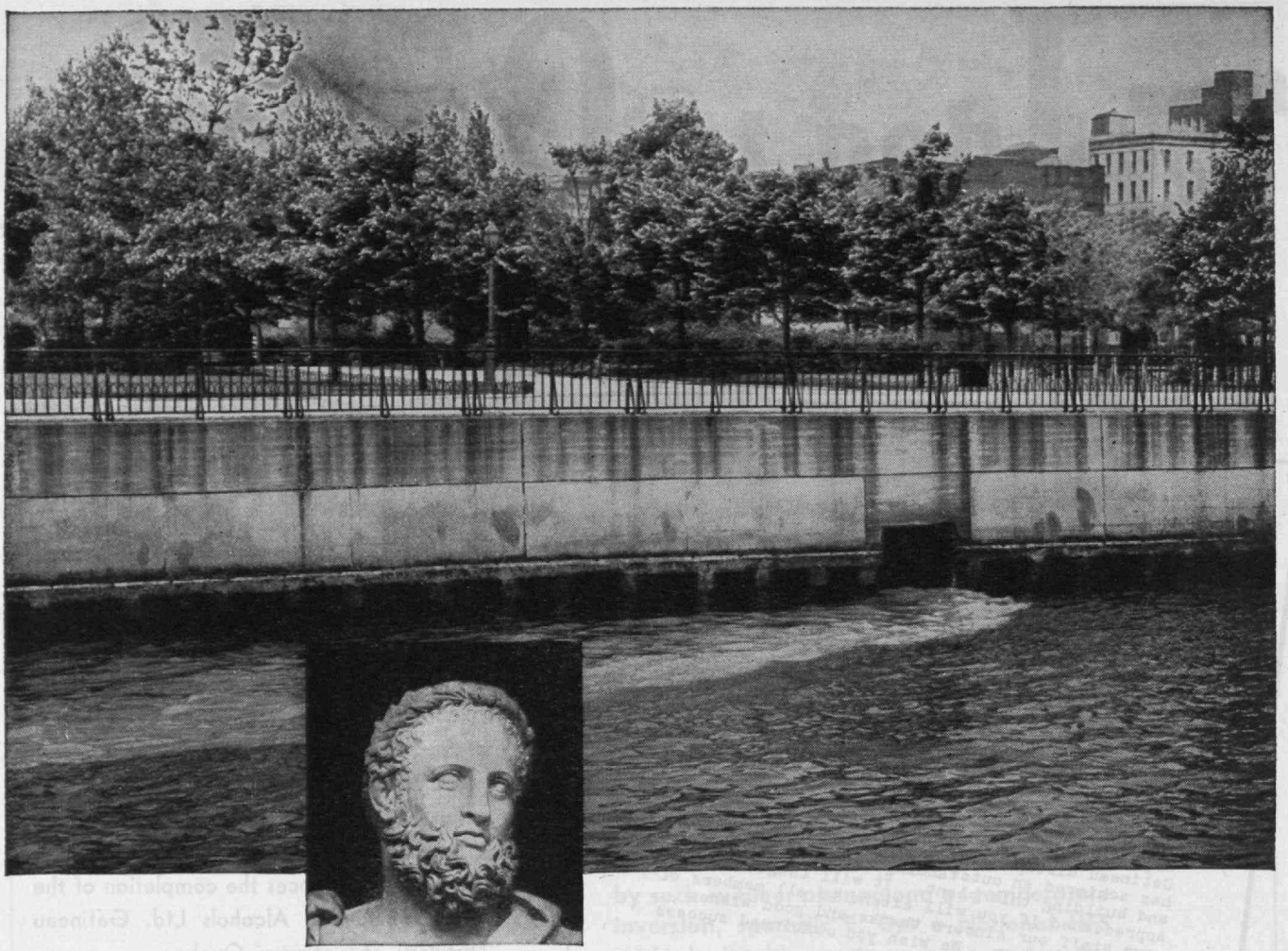
**PROCESS DESIGN**
**PILOT PLANT**
**MECHANICAL DESIGN**
**SHOP FABRICATION**
**FIELD ERECTION**
**INITIAL OPERATION**

# Vulcan

**distillation**
**evaporation**
**extraction**
**processes and equipment**

THE VULCAN COPPER & SUPPLY CO., General Offices and Plant, CINCINNATI, OHIO
SAN FRANCISCO NEW YORK BUENOS AIRES

IN CANADA — VICKERS VULCAN PROCESS ENGINEERING COMPANY LTD. — MONTREAL



# Hercules started something

## . . . with serious consequences

The Augean Stables of Greek mythology housed 3000 oxen and had not been cleaned for thirty years. Hercules accomplished the cleansing in one day by diverting two rivers so that they flowed through the stables. By this act he acquired the dubious distinction of being the Father of Stream Pollution and inaugurated a practice still prevalent — but needless — today.

Needless today because modern methods of sewage treatment can convert a potential hazard to a simple disposal problem. After settling, aeration and filtering, the clear liquid effluent may safely be discharged to open waterways. The remaining sludge, however, cannot be disposed of so simply, nor can it be allowed to accumulate.

Here C-E Raymond Flash-Drying and Incineration Systems offer a practical and economical solution. Sludge is dried instantly, followed, if desired, by deodorization. It may then be delivered as fertilizer directly to sacks or trucks, or may be incinerated — the heat of burning being used to operate the flash-drying equipment. Installations from coast to coast serve cities as large as Chicago, or as small as Tenafly, N. J., with equal success, making a valuable contribution to the abatement of water pollution.

Flash-drying and incineration of sewage is one of many diverse Combustion activities, symbolized by the C-E flame, which have a common basis in the efficient use of heat — a field in which Combustion Engineering–Superheater, Inc. is perhaps best known for its extensive line of steam generating, fuel-burning and related equipment. B-260

C-E

**COMBUSTION ENGINEERING–SUPERHEATER, INC.**

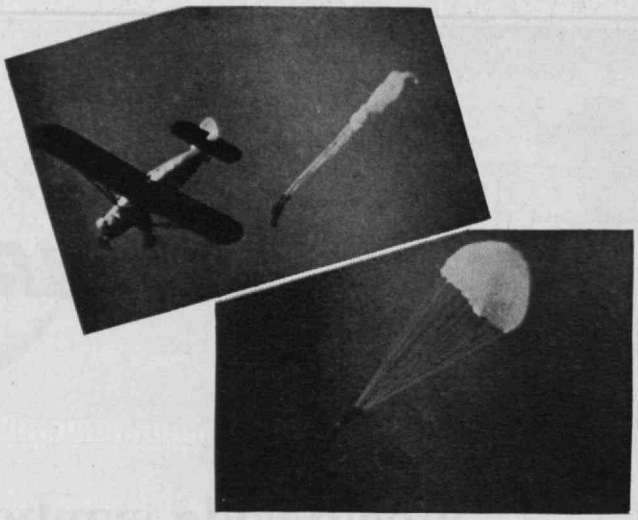
200 MADISON AVE. • N. Y. 16, N. Y.

All types of Boilers • Furnaces • Pulverized Fuel Systems • Stokers • Superheaters • Economizers • Air Heaters. *Also,* Pressure Vessels • Chemical Recovery Equipment • Sewage • Incineration Flash Drying Systems • Domestic Water Heaters


# DAWHIDE

## BETTER THAN RAWHIDE-LACES

Dawhide — "better than rawhide" Laces are tough, long-wearing, non-slipping, fabric laces that have been chemically treated and scientifically impregnated to become water-resistant and non-freezing. Dawhide Laces are ideal for active sport and rugged work shoes, and were used on the Byrd Expeditions to the Antarctic for lacing boots and lash ropes for pack sleds, tents, etc. Dawhide Laces were invented by and named for Robert Taylor Dawes, M.I.T. 1926.



## ELASTIC SHROUD LINES

Developed by Robert Taylor Dawes, (M.I.T. 1926) this elastic shroud line quickly takes up the shock of the opening parachute, even though the paratrooper bails out from a plane going at high speed. Landing shock and oscillation are markedly reduced, and a 'chute shrouded with these elastic lines spills its air automatically, minimizing the drag along the ground. It affords fliers greater safety in emergency jumps, and increases their efficiency.

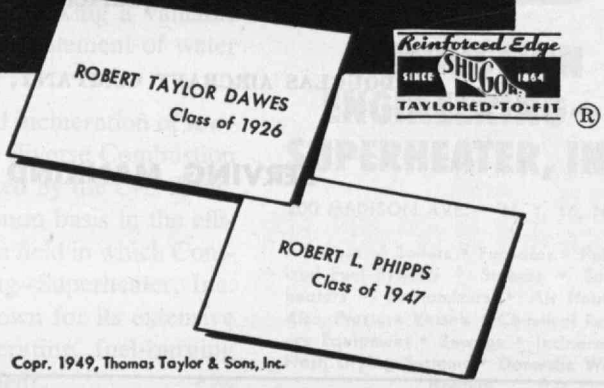

## ELASTIC SHOCK *and* EXERCISER CORDS

We supply the aircraft industry with Elastic Shock Cord and Elastic Exerciser Cord produced in various sizes to meet the military specifications of the U. S. government.

# THOMAS TAYLOR & SONS, INC.

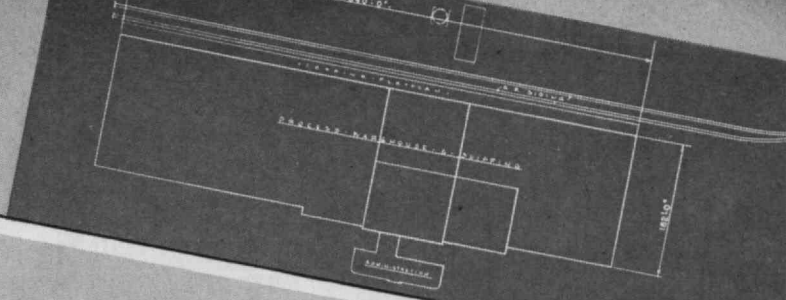
## HUDSON

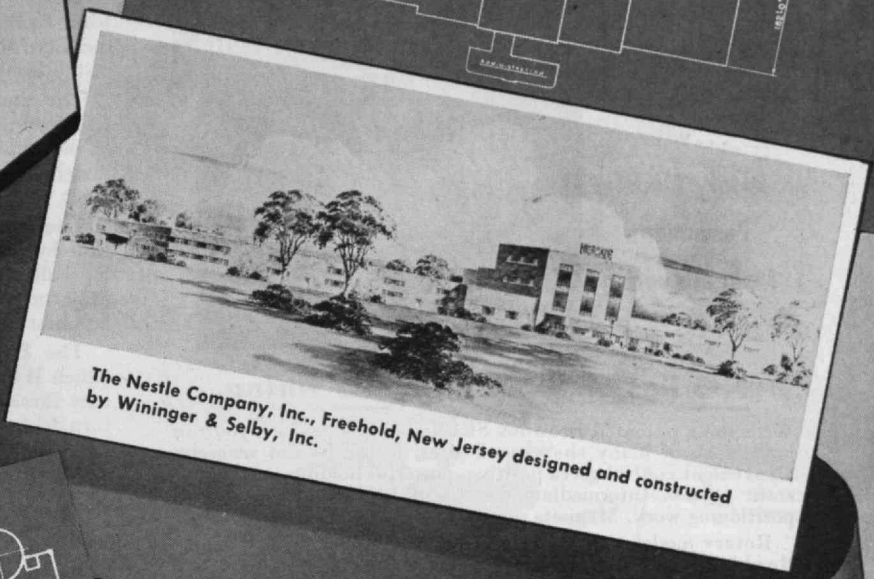
## MASSACHUSETTS



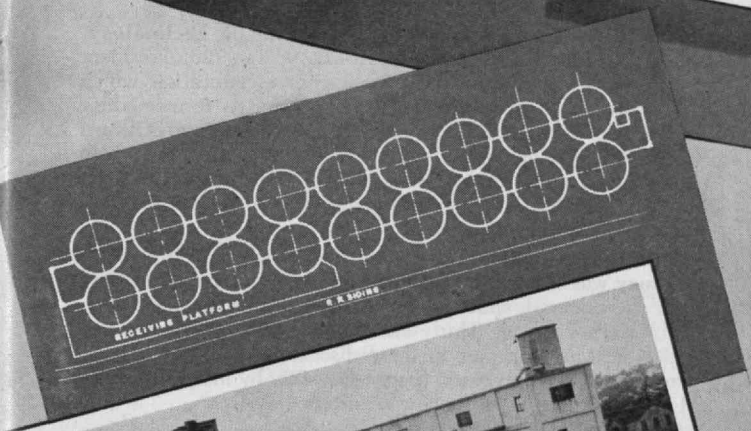

Reinforced Edge
SHUR-ON SINCE 1864
TAYLORED-TO-FIT ®

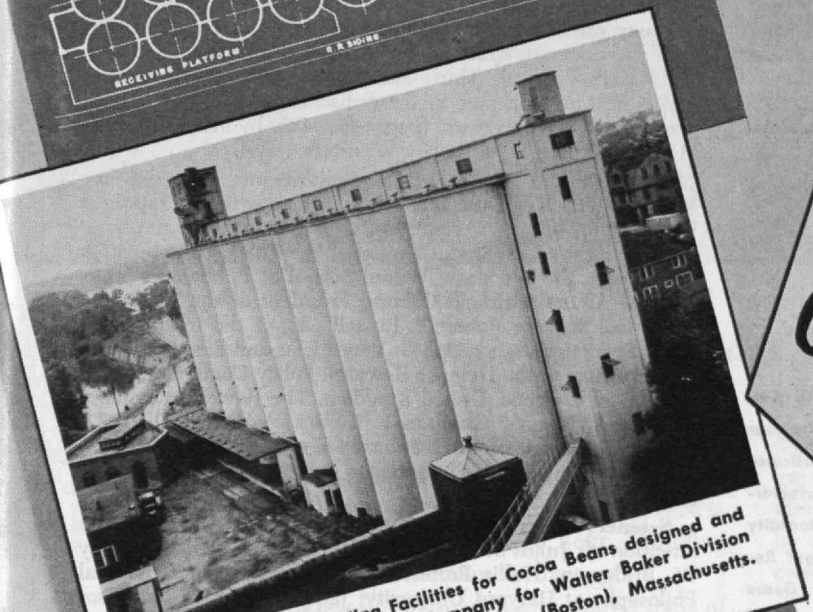
# The Complete Plant...





The Nestle Company, Inc., Freehold, New Jersey designed and constructed by Wininger & Selby, Inc.



Storage Bins and Handling Facilities for Cocoa Beans designed and constructed by The Nicholson Company for Walter Baker Division of General Foods Corporation, Dorchester (Boston), Massachusetts. Capacity 30,000,000 pounds.

# and/or This Important Phase

**Two Construction Firms** staffed to take care of your requirements in connection with ...

(1.) The complete INDUSTRIAL PLANT and/or (2.) that important BULK STORAGE and materials handling plant. The experience of each group is available to the other.

**WININGER & SELBY, INC.**
Specialized construction since 1934.

**THE NICHOLSON COMPANY INC.**
A wholly owned subsidiary, specialist in design and construction of bulk storage and facilities since 1914.

**10 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.**

Edward Wininger '24, *President*

# THE TABULAR VIEW

**The New Social Mind** (page 401) is the address by which JOHN E. BURCHARD, '23, Dean of Humanities and chairman of the Convocation Committee, opened the first general session of the Convocation on March 31.

**The State of Science** is discussed (page 403) by KARL T. COMPTON, for 19 years president of M.I.T. and now chairman of the M.I.T. Corporation. Dr. Compton is also chairman, Research and Development Board, National Military Establishment.

**The Twentieth Century — Its Promise and Its Realization** by WINSTON CHURCHILL contains the thoughts, concerning half a century of social change, of Britain's former Prime Minister, who himself played a major role in many of the trends he observes (page 409).

**The Half Century Ahead** is the Convocation address in which HAROLD E. STASSEN, former Governor of Minnesota and now President of the University of Pennsylvania, calls for a return to individual dignity, self-reliance, and enterprise (page 415).

**Obligations and Ideals of an Institute of Technology,** inaugural address of JAMES R. KILLIAN, JR., '26, President (page 429), stresses the need for a general education which places emphasis on science and engineering. As former editor of The Review, Dr. Killian has a special **Message to Alumni** (page 396). The new president also takes the opportunity which this issue affords – largest in The Review's history with a print order of 43,500 – to state Institute policy on **Academic Freedom and Communism** (page 432).

**Social Implications of Scientific Progress at the Mid-Century** was the general theme of six panel discussions dealing with the material, spiritual, and intellectual aspects of Twentieth-Century living. Thirty-one eminent scholars, statesmen, and educators took part in these discussions, for which summaries have been prepared (pages 420–425) by members of the M.I.T. staff serving as Review reporters.

**The Problem of World Production** was discussed by: Vannevar Bush, '16, President of the Carnegie Institution of Washington; Frank W. Notestein, Professor of Demography at Princeton University and Director of the Office of Population Research in the Woodrow Wilson School of Public and International Affairs; Fairfield Osborn, President of the New York Zoological Society; Robert P. Russell, '22, of the International Basic Economy Corporation in Venezuela; and Sir Henry Tizard, chairman of the Defence Research Policy Committee of the Ministry of Defence, United Kingdom. The Review's summary has been written by CHARLES P. KINDLEBERGER (Ph.D., 1937, Columbia), author of *International Short-Term Capital Movements,* and since last fall, Associate Professor of Economics at M.I.T.

**Science, Materialism and the Human Spirit** engaged the attention of: Julius S. Bixler, President of Colby College; Percy W. Bridgman, Hollis Professor of Mathematics and Natural Philosophy at Harvard University; Jacques Maritain, Professor of Philosophy at Princeton University; and Walter T. Stace, Stuart Professor of Philosophy at Princeton University. GEORGE DESANTILLANA (Ph.D., 1925, Rome University), a member of the Institute's Department of English and History, where he is now associate professor of the history of philosophy and science, has written the summary of this panel's discussion.

**Specialization in Twentieth-Century Education** came in for a thorough examination at the hands of: Sidney Hook, chairman of the Department of Philosophy, New York University; Frederic Lilge, Assistant Professor of Education, University of California; Sir Richard Livingstone, President of Corpus Christi College, Oxford University; Andrey A. Potter, '03, Dean of the Schools of Engineering and Director of the Engineering Experiment Station at Purdue University; Phillip J. Rulon, Professor of Education, Harvard University; and Charles A. Thomas, '24, Executive Vice-president, Monsanto Chemical Company. The Review's summary of discussions by these men was prepared by

(*Concluded on page 382*)

—The real essence of work is concentrated energy —WALTER BAGEHOT

# *Why construction gets better all the time*

WHERE ROADS were once built a shovelful at a time . . . today mammoth earth-movers handle a ton of earth at a time. Mobile cranes swing 20 tons at the flick of a switch. Giant crushers grind 150 tons of rock an hour. Traveling concrete mixers place entire batches as they go.

These are just a few of our improved powered tools of today that do a better job of construction *faster* and *easier*. They help provide us with critically needed new housing and business buildings . . . with super-highways and airfields for safer, smoother travel. And these tools are ours today because of *better materials* . . . and continuing research.

Alloy steels, for example, give them greater strength to resist shock and abrasive action . . . stamina to overcome the strain of day-by-day speed-up demands. And modern oxy-acetylene processes for welding and flame-cutting speed production of these better products of better steel.

Carbon is in the picture, too. In the form of electrodes, it's essential both to the production of alloy steels and the making of calcium carbide . . . from which comes acetylene gas for welding. Also, a chemical known as an *amine* provides a wetting agent for asphalt . . . speeding construction by making the asphalt stick more easily and firmly to its crushed rock base.

*The people of Union Carbide produce these and many other materials essential to today's better building and construction. They also produce hundreds of other materials for the use of science and industry, to help meet the needs of mankind.*

**FREE:** *You are invited to send for the new illustrated booklet, "Products and Processes," which describes the ways in which industry uses UCC's Alloys, Chemicals, Carbons, Gases, and Plastics.*

# UNION CARBIDE
## AND CARBON CORPORATION

30 EAST 42ND STREET UCC NEW YORK 17, N. Y.

*Trade-marked Products of Divisions and Units include*

ELECTROMET Alloys and Metals • HAYNES STELLITE Alloys • PREST-O-LITE Acetylene • LINDE Oxygen
BAKELITE, KRENE, VINYON, and VINYLITE Plastics • SYNTHETIC ORGANIC CHEMICALS • PYROFAX Gas

## THE TABULAR VIEW

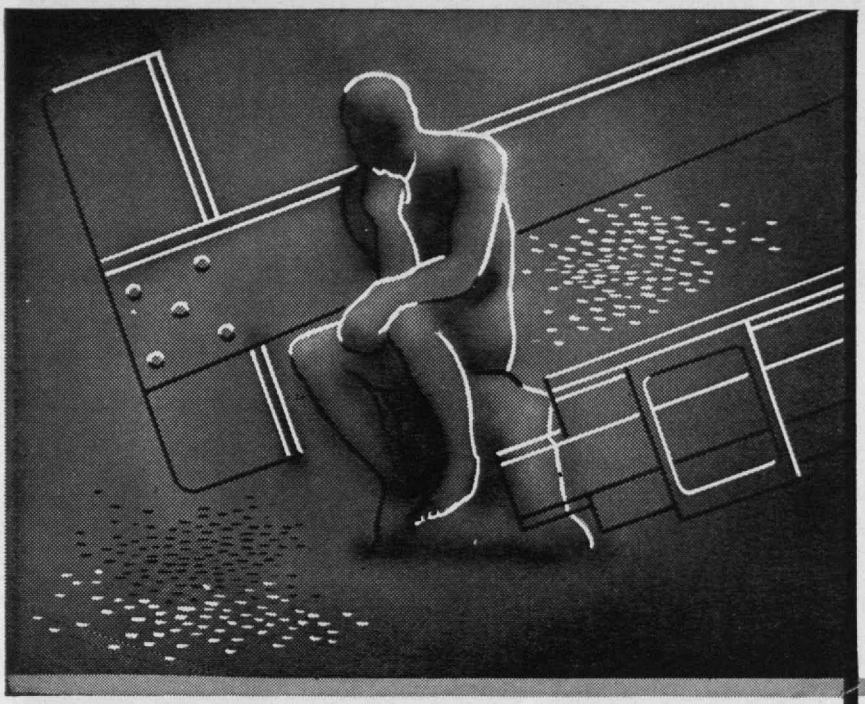
*(Concluded from page 380)*

JOHN B. RAE (A.B., 1932, A.M., 1934, Ph.D., 1936, Brown University), Associate Professor of History at M.I.T. and coauthor of *The United States in World History* to be published this year.

**The Problem of the Underdeveloped Area** engaged the attention of Richard M. Bissell, Jr., Professor of Economics at M.I.T. on leave as assistant deputy administrator, Economic Cooperation Administration; William Malcolm, Lord Hailey, Baron of Shahpur in the Punjab and Newport Pagnell in Buckinghamshire; Sir Ramaswami Mudaliar, President of the United Nations Economic and Social Council and Prime Minister, Mysore, India; Nelson A. Rockefeller, President, American International Association for Economic and Social Development and President, International Basic Economy Corporation; Pierre Ryckmans, Belgian representative on the Trusteeship Council, United Nations; and James M. Barker, '07, chairman of the Board, Allstate Insurance Company. The able summary on pages 420–425 was prepared by CHARLES H. BLAKE, '24 (S.B., 1925, Ph.D., 1929, M.I.T.), fellow of the American Academy of Arts and Science, and Associate Professor of Zoology at M.I.T.

**The Role of the Individual in a World of Institutions** was the topic discussed by Erwin D. Canham, editor of the *Christian Science Monitor* and President, American Society of Newspaper Editors; Carlos Contreras, President, National Planning Association of Mexico; Ralph E. Flanders, United States Senator from Vermont; Clinton S. Golden, Labor Adviser, Economic Cooperation Administration; and Merle A. Tuve, Director, Department of Terrestrial Magnetism, Carnegie Institution of Washington. The Review's report on this panel's discussions is the product of C. CONRAD WRIGHT (A.B., 1937, Ph.D., 1946, Harvard University), instructor in history in the Institute's Department of English and History.

**The State, Industry, and the University** was the topic of discussion participated in by Laird Bell, chairman of the Board of Trustees of both Carleton College and the University of Chicago; Lee A. DuBridge, President, California Institute of Technology; Bryn J. Hovde, President, The New School for Social Research; Peter H. Odegard, chairman of the Department of Political Science, University of California; and John Dale Russell, Director of the Division of Higher Education, United States Office of Education. THOMAS H. D. MAHONEY (A.B., 1936; A.M., 1937, Boston College; Ph.D., 1944, George Washington University), coauthor of *The United States in World History*, in press, is assistant professor of history in the Department of English and History at M.I.T., and has prepared the condensation of this panel's discussions.



# Thinking of improving

"Improving" any machine really means increasing its productive capacity. That means tinkering with speeds and weights and strength—ending up with alloy steels.

Which alloy steel?—the one that meets physical requirements at the lowest cost. Molybdenum steels fill that bill. Good hardenability, plus freedom from temper brittleness, plus reasonable price enable them to do it.

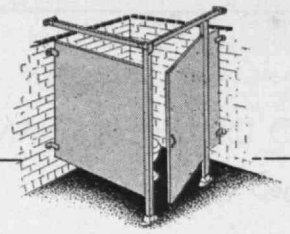
Send for our comprehensive 400-page book, free; "MOLYBDENUM: STEELS, IRONS, ALLOYS."

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS

**Climax Molybdenum Company**
**500 Fifth Avenue · New York City**

MOLY

C2

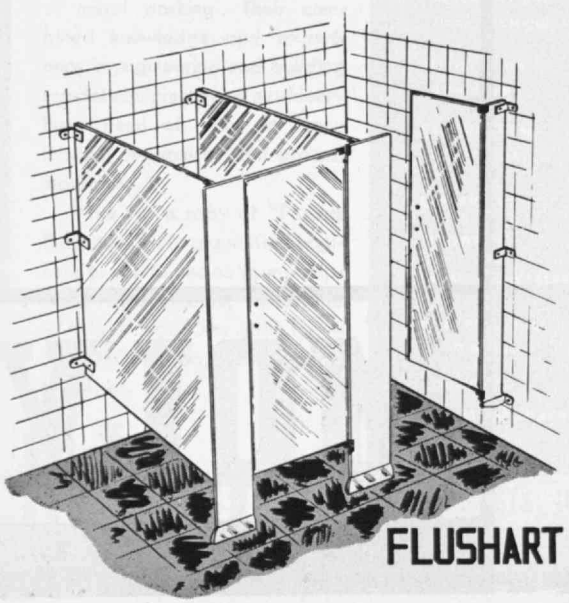


# FLUSH-METAL PARTITION CORP.

46-10 11th STREET LONG ISLAND CITY, N. Y. STILLWELL 4-3380

## Manufacturers of Toilet Stall Partitions, Shower Compartments, Hospital Cubicles

| *A FEW OF OUR INSTALLATIONS* | *Architects* | *General Contractors* |
|---|---|---|
| Astoria Houses, Queens, N.Y. | Harrison & Abramovitz | Corbetta Construction Co., Inc. |
| Bay Ave. School, Patchogue, L.I. | E. Post Tooker, Assoc. | J. H. Eisele Co., Inc. |
| Board of Educ., New York City | Eric Kebbon | Various contractors |
| Board of Educ., Newark, N.J. | Behee & Krahmer | Bd. of Educ., Newark, N.J. |
| Broadway Savings Bank, N.Y.C. | Harold R. Sleeper | Wm. L. Crow Construction Co. |
| Calco Chemical Co., Willow I, W.Va. | Ebasco Services, Inc. | Turner Construction Co. |
| Central Hudson Gas & Elec. Co., N.Y. | F. Keally & H. Patterson | Edward Corning Co. |
| Cheshire School, Cheshire, Conn. | Douglas Orr | W. J. Megin, Inc. |
| Conn. College Dorm., New London, Conn. | Shreve, Lamb & Harmon Assoc. | A. F. Peaslee, Inc. |
| Consolidated School, Wolcott, Conn. | C. J. Malmfeldt & Assoc. | A. F. Peaslee, Inc. |
| Cornell Univ., Women's Dorm. | Bagg & Newkirk | Barr & Barr, Inc. |
| E. F. Drew & Co., Inc., Boonton, N.J. | Wortmann Assoc. | Brown & Matthews Co., Inc. |
| 59th St. Theatre, N.Y.C. | William I. Hohauser | Owner |
| Ft. Worth Club Bldg., Texas | William Ginsberg Associates | Thomas S. Byrne, Inc. |
| Freeport High School, Freeport, N.Y. | Frederic P. Wiedersum | John A. Johnson & Sons |
| Fresh Meadows Housing, Queens, N.Y. | Voorhees, Walker, Foley & Smith | Geo. A. Fuller Contracting Co., Inc. |
| General Electric Co., Medford, Mass. | Joseph B. Gunnison | Duffy Construction Co. |
| Gowanus Houses, Brooklyn, N.Y. | Ely Jacques Kahn | Willcox Construction Co., Inc. |
| Hanovia Chem. & Mfg. Co., Newark, N.J. | Epple & Seaman | Hugh Montague & Son Co. |
| Hardee Co. School, Wauchula, Fla. | M. Leo Elliott | C. A. Fielland, Inc. |
| Hershey Farms, Inc., Long Island City | Jacob Feld | Carl Buhr, Inc. |
| Hillside Hosp., Queens, N.Y. | Louis Allen Abramson | Andrew Weston |
| Hoffman La Roche, Nutley, N.J. | Fellheimer, Wagner & Vollmer | John W. Ryan Constr. Co. |
| Hygrade Sylvania Corp., Boston, Mass. | Lockwood Greene | Leslie R. Porter Co. |
| Idlewild Airport, Fed. Bldg., N.Y. | Reinhard, Hofmeister & Walquist | Todd & Brown, Inc. |
| Ind. Steel Prod. Co., Greenburgh, N.Y. | A. Epstein & Sons | Thompson Starrett Co., Inc. |
| Jamaica Race Track, Jamaica, L.I. | Aymar Embury 11 | Roberts Nash Constr. Corp. |
| Kleinhans Music Hall, Buffalo, N.Y. | Kidd & Kidd | M. Shapiro & Son |
| Mass. Institute of Technology | McCreery and Theriault | McCreery and Theriault |
| Mt. Sinai Hosp., Hartford, Conn. | Ebbets, Frid and Prentice | So. New Eng. Contrg. Co. |
| National Biscuit Co., N.Y.C. | Louis Wirsching, Jr. | White Construction Co. |
| Nescafe Plant, Freehold, N.J. | Wininger & Selby, Inc. | Wininger & Selby, Inc. |
| New Britain Hosp., New Britain, Conn. | Frederick J. Dixon | Wadhams & May Co. |
| N.Y. Central R.R. Co., N.Y.C. | N.Y. Central R.R. | Poirier & McLane Corp. |
| N.Y. N.H. & H. R.R., Berlin, Conn. | N.Y. N.H. & H. R.R. | H. Wales Lines Co. |
| N.Y. University, N.Y.C. | Wm. S. Gregory | John Lowry, Inc. |
| Palisades Amusement Park, N.J. | E. C. A. Bullock | Romagnino Constr. Co., Inc. |
| Penn R.R., Pittsburgh, Pa. | Penn. R.R. | Helvenston Constr. Co. |
| Charles Pfizer Co., Brooklyn, N.Y. | Baker & Spencer | W. J. Barney Corp. |
| Plastic Mfrs., Inc., Stamford, Conn. | Fletcher-Thompson | Wm. J. Lyons Constr. Co., Inc. |
| Remington Rand, N.Y.C. | Francisco & Jacobus | Jas. J. Waters Corp. |
| St. Joseph's School, Croton Falls, N.Y. | Starrett & Van Vleck | J. Bisceglia & Sons, Inc. |
| St. Mary's Hospital, Amsterdam, N.Y. | Howard F. Daly | James Stewart & Co., Inc. |
| St. Vincent's Hospital, N.Y.C. | Eggers & Higgins | Vermilya-Brown Co., Inc. |
| Schrafft's Sales Corp., N.Y.C. | Block & Hess | Robert Johnson, Inc. |
| Seton Hall College, So. Orange, N.J. | Fanning & Shaw | D. J. Cronin, Inc. |
| Shorehaven Beach Club, Bronx, N.Y. | O'Hara, Hedlander & Edson | W. J. Barney Corp. |
| Sperry Gyroscope Co., Lake Success, N.Y. | Stone & Webster Eng. Corp. | Stone & Webster Eng. Corp. |
| Textron, Inc., N.Y.C. | Raymond Loewy Assoc. | Rheinstein Constr. Co., Inc. |
| Trinity College, Hartford, Conn. | McKim, Mead & White | A. F. Peaslee, Inc. |
| United Nations, Lake Success, N.Y. | Skidmore, Owings & Merrill | James King & Son, Inc. |
| Van Rensselaer Jr. H.S., Rensselaer, N.Y. | H. O. Fullerton | Duncan & Cahill |
| Watchtower Dorm., Brooklyn, N.Y. | Alexander D. Crosett | Skinner, Cook & Babcock, Inc. |
| Western Electric Co., Haverhill, Mass. | Private Plans | J. J. Conviser |
| Westinghouse Elec. Mfg. Co., Newark, N.J. | Private Plans | Ed. M. Waldron, Inc. |
| Weston Elec. Instrument Corp., Newark, N.J. | Walter Kidde Construction Co. | Walter Kidde Constr. Co. |
| F. W. Woolworth Co., Newark, N.J. | A. F. Winter | F. W. Woolworth Co. |




## REPRESENTATIVES

**Albany, N. Y.** · HAEFNER BUILDING PRODUCTS CO., 103 Southern Boulevard ..... *Albany 4-8336*

**Boston, Mass.** · A. W. HALL CO., 258 Park Square Building *Commonwealth 1452*

**Buffalo, N. Y.** · BRONSTEEL PRODUCTS CO., 96 East Amherst Street *Parkside 4811*

**Cumberland, Md.** · YOUNG SALES & ENGINEERING CO., 308 Bedford Street

**Hartford, Conn.** · R. V. THOMAS, 22 Fernbel Lane, West Hartford *32-1145*

**Newark, N. J.** · ADAMS & CO., 717 South Orange Avenue *Essex 3-6333*

**Philadelphia, Pa.** · TAYLOR ALBERTSON CO., 1616 W. Indiana Avenue ..... *Baldwin 2930*

**Pittsburgh, Pa.** · BETTER BILT SUPPLY INC., 3614-36 Boulevard of Allies ..... *Schenley 2134*

**Rochester, N. Y.** · BOWERMAN BUILDERS SERVICE, 1307 East Main Street ..... *Culver 3878*

**Tampa, Florida** · THE J. E. WOOD CO., P.O. Box 861 ..... *2661*


Demonstration of air filter dust test—practical imagination in research at Chrysler Corporation

## He's pouring dust down an engine's "throat"!

Your car's engine "swallows" about 14 times as much air as gasoline! That air must be clean—to keep airborne dust and dirt from damaging smooth-working parts.

The apparatus in this picture was created by our engineers to learn the *best* way of keeping harmful road dust out of a car's engine. The transparent object is an air filter—made of clear plastic so expert observers can study exactly what goes on inside.

Into the filter goes a hefty meal of dust, dirt and grit—the kind you'd meet if you drove the worst roads in America . . . only more so! Then the device draws air through the filter, just as a car's engine does. It's the filter's job to catch and *hold* the dust.

We tested many different filters—and developed one that traps dirt best. As a result, *all* our cars have this filter, which provides *double* protection—an oil bath to catch heavy dust and an extra trap for lighter bits.

The owners of Plymouth, Dodge, De Soto and Chrysler cars often say that their engines keep running so smoothly and economically year after year. One big reason is this air filter—another example of how we put practical *imagination* to work to build better, longer-lasting cars for you.

**CHRYSLER CORPORATION**

**PLYMOUTH DODGE DE SOTO CHRYSLER**

**Airtemp** Heating, Cooling, Refrigeration **Chrysler** Marine & Industrial Engines **Dodge** Job-Rated Trucks **Oilite** Powdered Metal Products **Mopar** Parts & Accessories **Cycleweld**

# "YOU CAN'T MISTAKE THE FLAVOR"

A fine, distinctive, rich BODY... a delightful AROMA which promises complete flavor satisfaction.

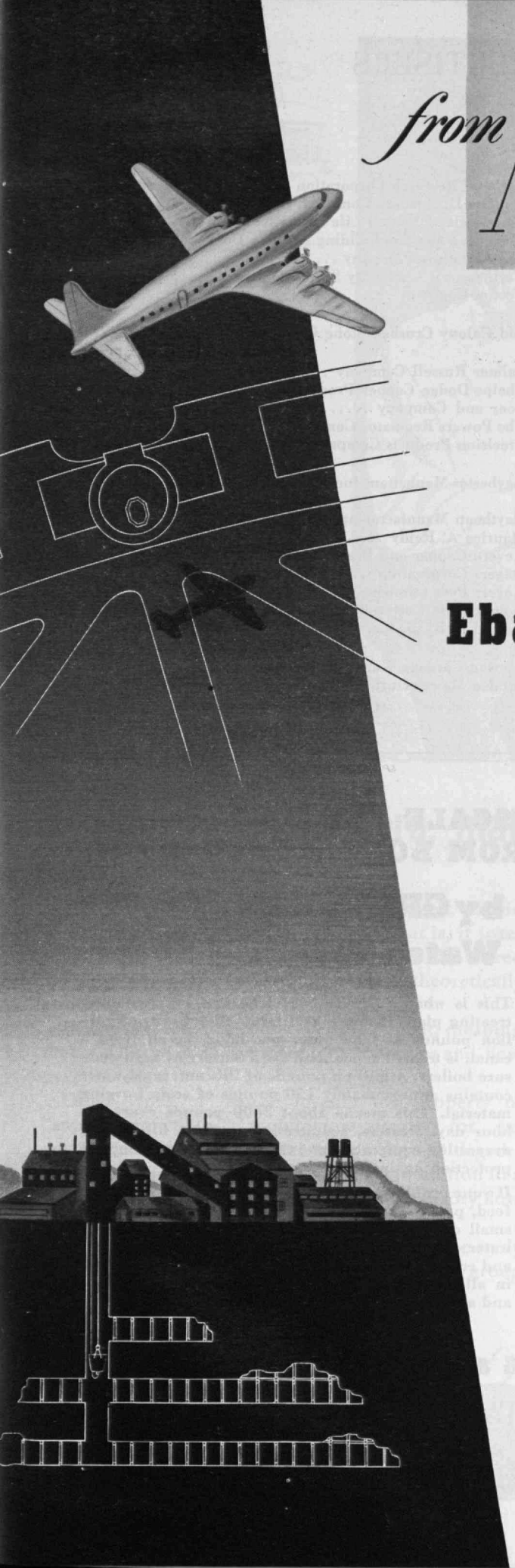

*Vacuum Packed in Tin or Glass,* REGULAR and DRIP GRIND

# INDEX TO ADVERTISERS

May, 1949



(*Continued on page 390*)



*from Airlines to Zinc Mines...*

# Ebasco gets things done!

Chances are good that you're in the kind of business or industry served by EBASCO . . .

And, chances are equally good that you have some pressing *business problem!* It may be systems and methods, employee relations, marketing, taxes, shipping or insurance. Whatever it is, it's important to your company to have it solved *quickly* and *efficiently*.

Management executives, more and more, are turning to EBASCO for help in solving such problems. For, in EBASCO, they have found a team of experts—engineers, constructors and business consultants—with seasoned experience in the various phases of business and industry.

*No job is too big or too small.* EBASCO can help you solve production problems in your plant . . . or design and construct an entirely new plant for you . . . procure all materials and components . . . make appraisals and business studies for investment purposes . . .

*So, call on* EBASCO *to get the help you need!*

From past success in handling business and industrial problems, all over the world, we are prepared to handle yours . . . and do it from A to Z.

Write for free booklet *The Inside Story of Outside Help* describing the many EBASCO services available to you. Ebasco Services Incorporated, Two Rector Street, New York 6, N. Y.

## EBASCO SERVICES
INCORPORATED

*Ebasco Teamwork gets things done anywhere in the world*

***Some of the Businesses and Industries served by EBASCO***

**A***irlines*
**B***anking*
**C***hemical*
**D***epartment Stores*
**E***xporting*
**F***ood*
**G***arment Mfg.*
**H***otels*
**I***nvestment Firms*
**J***obbing*
**K***raft Pulp Mills*
**L***umber*
**M***achine Tool*
**N***ewspaper Pubg.*
**O***il*
**P***ulp and Paper*
**Q***uartz and Glass*
**R***ailroads*
**S***teamship Lines*
**T***extile Mfg.*
**U***tilities*
**V***alve and Pipe Mfg.*
**W***ire and Cable Mfg.*
**X***-Ray Equipment Mfg.*
**Y***arn and Fiber Mfg.*
**Z***inc and Mining*

ENGINEERS · CONSTRUCTORS
EBASCO
BUSINESS CONSULTANTS

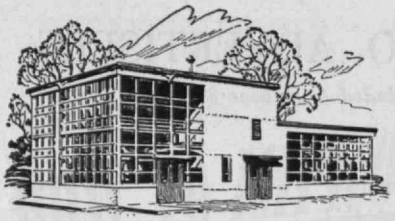
| | |
|---|---|
| Appraisal | Insurance & Pensions |
| Budget | Purchasing |
| Business Studies | Rates & Pricing |
| Consulting Engineering | Research |
| Design & Construction | Sales & Marketing |
| Financial | Systems & Methods |
| Industrial Relations | Taxes |
| Inspection & Expediting | Traffic |

# INDEX TO ADVERTISERS

(*Continued from page 388*)

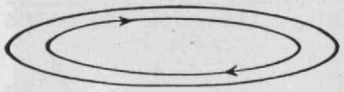


(*Concluded on page 392*)

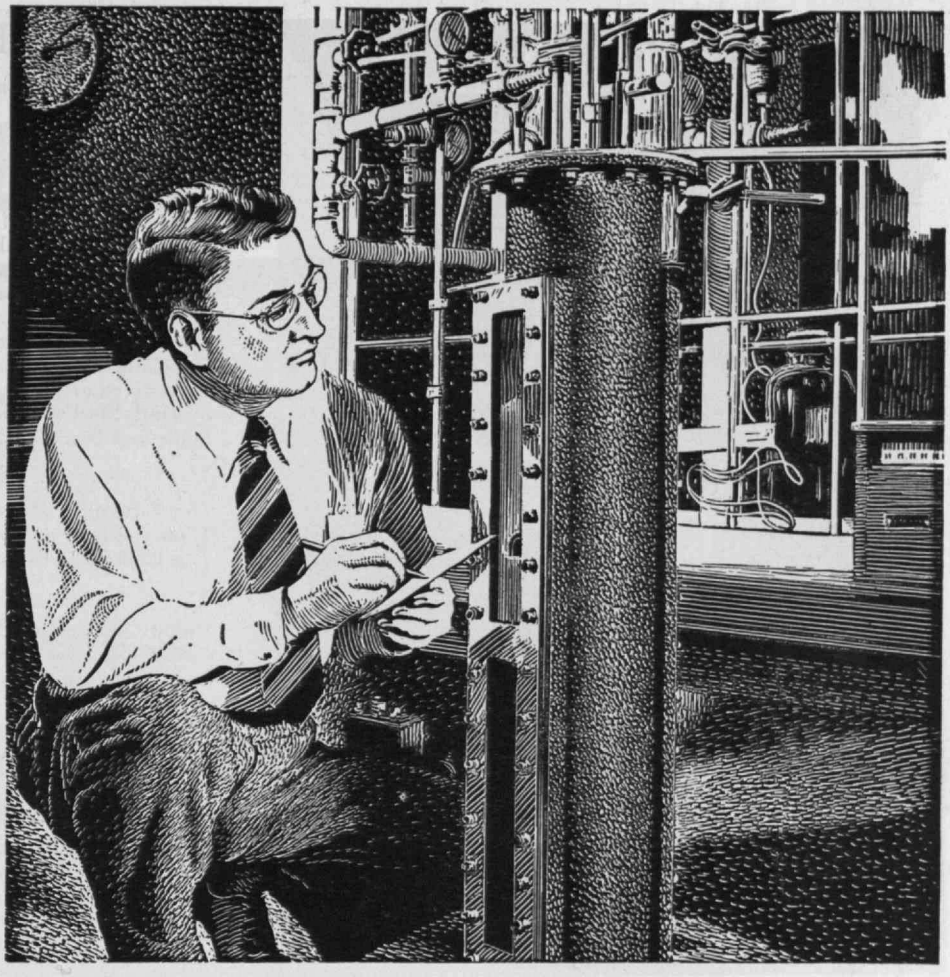


NEW LABORATORY UNIT, *part of G-E Research Laboratory, is the center of General Electric research into such low-temperature phenomena as...*

SUPER-FLUIDITY *of helium—meaning that at near-absolute zero it loses its viscosity, can spin forever ...and*



SUPER-CONDUCTIVITY—*the loss of all electrical resistance by some materials below about 15° absolute.*



# Near absolute zero, matter does strange things...

AT 455 degrees below zero Fahrenheit, liquid helium becomes a "superfluid." That is, it loses its viscosity; if it were to be set in motion like stirred coffee spinning in a cup, part of it would theoretically continue to spin forever.

It also becomes a "super-wetting" agent, meaning that it will creep up the sides of a container and flow over the edge.

Other types of matter develop the property of "super-conductivity." Columbium-nitride, for example, loses all electrical resistance below 15 degrees absolute. If an electric current were set in motion in a closed loop of this substance, it would in theory flow indefinitely.

These are some of the facts of cryogenics—the study of low-temperature phenomena—into which a group of young General Electric scientists are directing their investigations.

So far their studies are in only the earliest stages. But already the facts of this nether world of temperature have aroused enough interest that with the building of a new Research Laboratory near Schenectady, a $250,000 laboratory unit has been especially constructed to aid and amplify their work.

Through its emphasis on research and creative thinking, through encouraging fertile minds to follow their own imaginative bent and by implementing their work with the best available facilities, General Electric remains "a place where interesting things are happening," and stays in the forefront of scientific and engineering development.

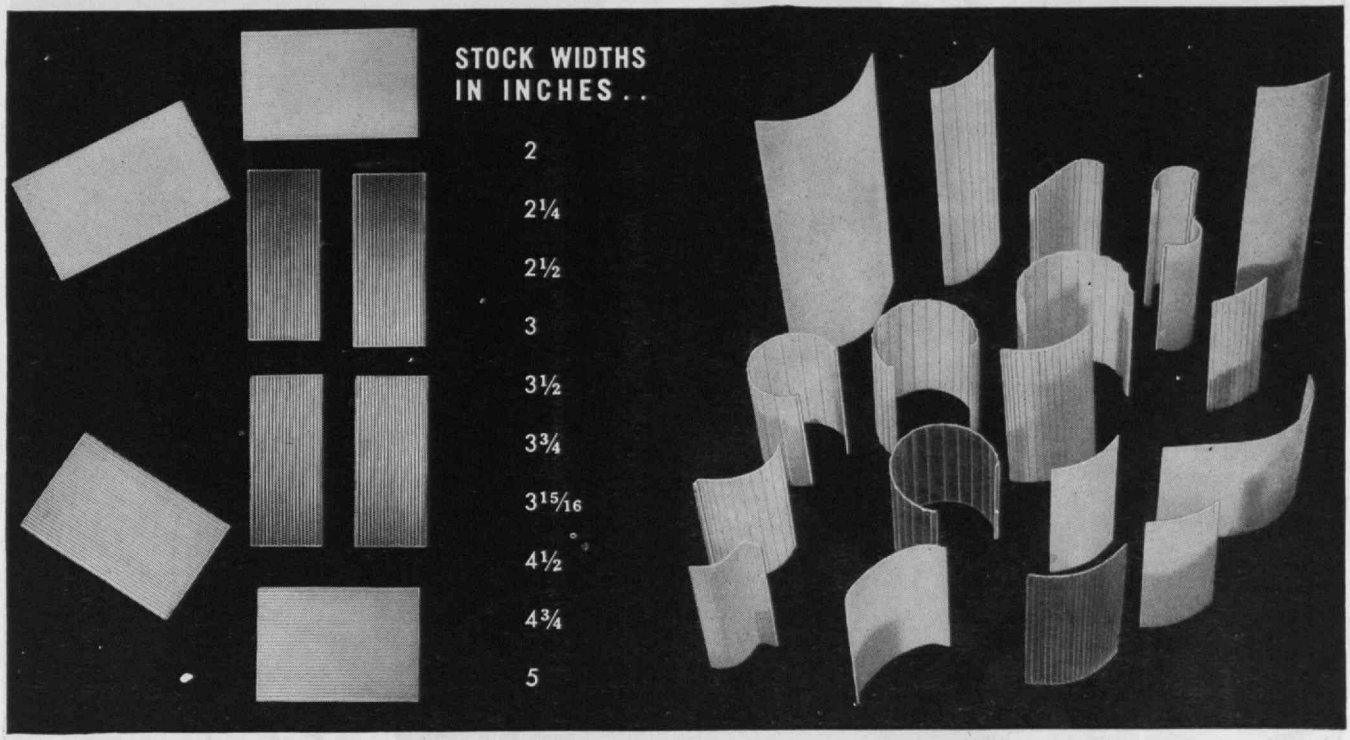
*You can put your confidence in—*

**GENERAL ELECTRIC**

# INDEX TO ADVERTISERS

*(Concluded from page 390)*

# HOW TO *IMPROVE* FLUORESCENT LIGHTING FIXTURES *and Cut Costs, too!*




## *STOCK* SIDE PANEL SECTIONS

## *CUSTOM* SIDE PANEL SECTIONS

SANDEE has developed *plastic* side and bottom panels for Fluorescent Lighting Fixtures to a high degree of efficiency! They are now available in clear or translucent materials for quick shipment in both STOCK and CUSTOM sections. Sizes range up to 15 inches in width. All sections supplied cut to length to fit your fixture. They may be used for side or bottom panels in single or *double* widths.

"POLY-LITE" Extruded Panels offer many superior advantages. Electrical Contractors, Electricians and Maintenance men . . *all welcome* Fluorescent Fixtures "POLY-LITE" equipped. They are 1. easier to install; 2. lighter in weight; 3. *safer* . . much less breakage; 4. easier to clean . . just wipe with a cloth dampened with a detergent.

Other advantages include controlled *uniform* light transmission, very excellent rigidity, remarkable dimensional stability (resistance to distortion), and unsurpassed design possibilities. Take advantage of Sandee's *practical* know-how of materials, designing for extrusion and unique production techniques. Ask our extrusion engineers for suggestions, ideas, samples and cost estimates. There's no obligation.

*Sandee Manufacturing Company*, 5050 FOSTER AVENUE, CHICAGO 30, ILLINOIS

SALES REPRESENTATIVES IN NINETEEN PRINCIPAL CITIES

"WORLD'S LARGEST CUSTOM EXTRUDERS OF PLASTICS"

# "POLY-LITE"®

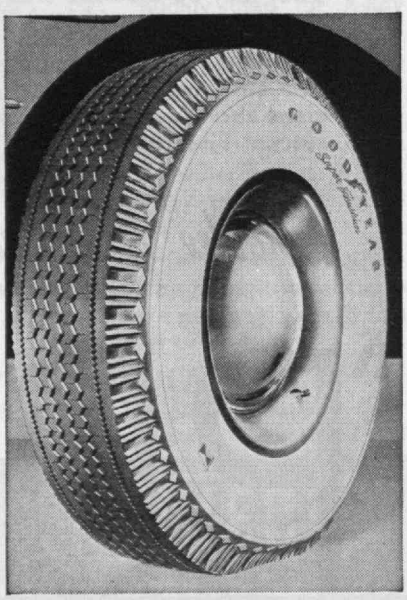
EXTRUDED POLYSTYRENE SIDE SHIELDS BY SANDEE

# Sound advice from a sheriff —about your next tires!

**GLEN JONES**, Sheriff of Clark County, Nevada, knows from *his* experience how Super-Cushion can help *you* enjoy a safer, softer ride. He says—

"Take it from me—no other tire can match this Super-Cushion. In my job, I often have to drive hard and fast. With Super-Cushions, my car hugs the curves and gives me an amazingly soft ride. I get quicker, safer stops—and longer mileage than I've had from any other tires."

The Super-Cushion gives greater mileage, is bigger and softer . . . runs on 24 *pounds* of air . . . but will fit your present wheels! You'll get a *softer* ride, less wear on your car, fewer rattles and repair bills, greater safety and blowout resistance. *See your Goodyear dealer today!*



MORE PEOPLE RIDE ON GOODYEAR TIRES THAN ON ANY OTHER KIND

**We think you'll like "THE GREATEST STORY EVER TOLD"— every Sunday—ABC Network**

*Super cushion* by **GOODYEAR**

Super-Cushion T. M.—The Goodyear Tire & Rubber Company

Photo by Arthur Griffin

MIT MID-CENTURY CONVOCATION AND INAUGURATION ISSUE OF

*Editor:* B. Dudley

*Business Manager:* R. T. Jope

*Editorial Associates:* Paul Cohen; J. R. Killian, Jr.; Willy Ley; F. W. Nordsiek; J. J. Rowlands; D. O. Woodbury

*Editorial Staff:* Ruth King; Ruth A. Phillips

*Business Staff:* Eileen E. Klimowicz; Madeline R. McCormick

*Publisher:* H. E. Lobdell

# THE TECHNOLOGY REVIEW

TITLE REGISTERED, U. S. PATENT OFFICE

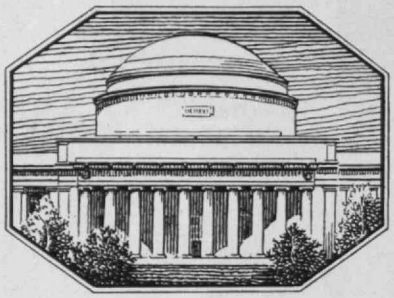
*EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY*

CONTENTS *for May, 1949* Vol. 51 No. 7



Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 50 cents a copy. Annual subscription, $3.50; Canadian and foreign subscription, $4.00. Published for the Alumni Association of the M.I.T.: C. George Dandrow, President; H. E. Lobdell, Executive Vice-president; John A. Lunn, Orville B. Denison, Vice-presidents; Donald P. Severance, Secretary-Treasurer. Published at E. L. Hildreth and Company, Brattleboro, Vt. Editorial Office, Room 7-203, Massachusetts Institute of Technology, Cambridge 39, Mass. Entered as second-class mail matter at the Post Office at Brattleboro, Vt.

Three weeks must be allowed to effect change of address, for which both old and new addresses should be given.



# A Message to Alumni

*This issue of The Review breaks records in its size and its circulation. As an ex-editor of The Review and now as the president of the Institute, I take pride in this ample evidence that Technology Alumni have created a journal that reflects, in its vigor and quality, the flourishing state of their Association.*

*Since this issue goes to so many Alumni, I welcome the opportunity to send greetings to each of you. I also wish to express my heartfelt appreciation for the generous confidence and the friendly good wishes which so many of you have expressed as I assume my formidable assignment as president of the Institute.*

*The Mid-Century Convocation, which this issue reports, was a resplendent academic occasion which has left a profound impression both within the Institute family and without. To me one of the most impressive aspects of the celebration was the demonstration of unity, good will, and loyalty on the part of Alumni. Not only did we experience a welling up of Technology spirit; we also witnessed, as so many of our friends from sister institutions have remarked, a demonstration of how cohesive the Technology family really is and how great a singleness of purpose there is to keep this Institute strong and vigorous.*

*Altogether, no incoming college president ever had his way so effectively illumined or assumed his duties against so challenging a background.*

*To all of you who cherish and love this institution, I pledge my best efforts to maintain our record of accomplishment and the heart-warming spirit which found expression in the Convocation.*

*Yours cordially,*

James R. Killian, Jr.

THE
TECHNOLOGY
REVIEW

Vol. 51, No. 7 May, 1949

# A NEW ERA OPENS FOR M.I.T.

For three days this spring, Boston and Cambridge were the focal points of world-wide attention when the Massachusetts Institute of Technology held its Mid-Century Convocation on the Social Implications of Scientific Progress on March 31 and April 1, to be climaxed on April 2 by the Inaugural of James R. Killian, Jr., '26 as the tenth president of Technology. The combined convocation and inauguration was the occasion for hundreds of scholars, administrators and other leaders in the field of education to come to M.I.T. to listen to major addresses by the Right Honorable Winston Spencer Churchill, Harold E. Stassen, President of the University of Pennsylvania, James R. Killian, first M.I.T. alumnus to become its administrative head, Karl T. Compton, chairman of the M.I.T. Corporation, and John E. Burchard, '23, Dean of Humanities. It was the occasion for nearly three dozen eminent scholars to examine the material, spiritual, and intellectual aspects of Twentieth Century progress which has been dominated very largely by science and technology. It was the occasion for 18,000 Alumni and other friends of M.I.T. to converge on Cambridge and Boston in such numbers as to seriously tax the living accommodations which these two cities had to offer. Even Boston's largest hall – the Garden – with a capacity of 13,909 could not seat at one time, all those who were drawn "back to Tech" by the brilliant three day event.

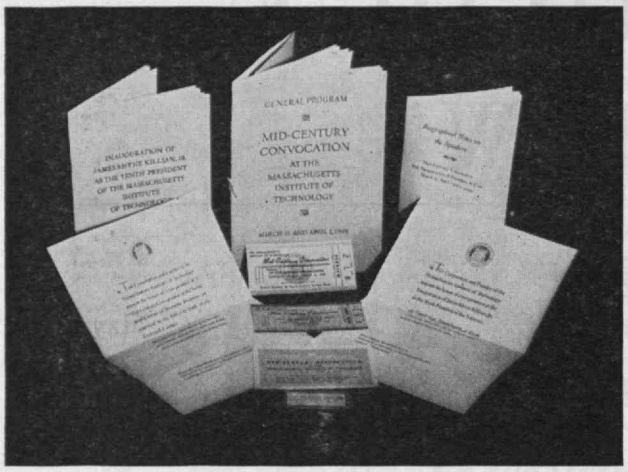
Several factors were responsible for timing of the three-day celebration such that distinguished scholars could examine questions of outstanding importance in the world's living at the half-way mark of the Twentieth Century. Probably the most fundamental, although least apparent on the surface, was the fact that during the administration of President Compton, and particularly during World War II, the Massachusetts Institute of Technology has unquestionably taken its place among the leading institutions of higher learning of the world. By this fact alone the Institute is forced to examine the role it is to play in the post-war era – a role considerably greater than that in which it was engaged following World War I. It is, indeed, not so strange a reason as might first be surmised, for the Institute's contributions during the past two decades have brought forth such an unprecedented expansion that, for M.I.T., the nerve-racking years after World War II truly represent "the threshold of a new era" as Dr. Compton has said in his inaugural day address.

Another reason for planning events of more than ordinary scope resulted from the Corporation's selection of an M.I.T. alumnus to succeed President Compton in administering the affairs of the grown up "Boston Tech"; many would want to see the new president inaugurated into office. But if the Institute were to embark on a new era of expansion to fulfill its obligation of nation-wide educational service and fundamental research under a newly inaugurated president, what would be more logical than to contemplate, on a world-wide scope, the present ills of human society? A profound examination of the effects which science has had in molding our daily lives would help to allay the concern, expressed by some who overlook the wretchedness of earlier eras, that science and technology are responsible for the misery and suffering which has been man's lot since the turn of the century. Certainly no harm could be done by – and a great deal of good might result from – such a soul-searching examination of man's present intellectual, material, and spiritual status, conducted under the auspices of a scientific group.

Thus, almost, since the Corporation's meeting last October, when selection of the new president was announced, there was planned not only an inaugural for President Killian, but also a scholarly survey of man's plight at mid-century. These events would take their natural place in the long range program of preparation for the new era which confronts the M.I.T. of to-

*Programs of events with tickets and identification badges were available for those invited to attend the convocation and inauguration ceremonies at the Massachusets Institute of Technology on March 31 and April 1 and 2.*

*M.I.T. Photo*




**INVITATION**

day. Remembering the admonition in Dr. Killian's address on "Funding M.I.T.'s Independence," those responsible for forthcoming events agreed that they would "make no little plans; they have no magic to stir men's blood." Outstanding scholars, eminent educators, and world renown statesmen would be sought to take part in a pageant aiming, through education, to elevate man above his present limitations. Of course the M.I.T. Faculty and staff would have important parts to play but, within the scope of the program, those best suited for the occasion would be invited to play the major roles, no matter what their affiliation or fields of major interest might be.

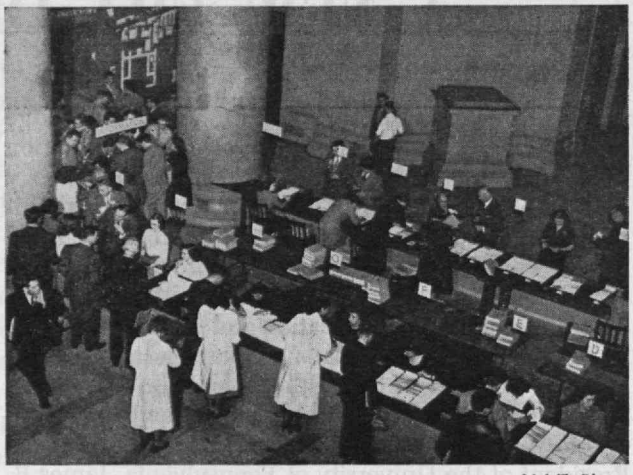
A Convocation Committee headed by John E. Burchard, '23, Dean of Humanities, an Inauguration Committee, headed by Everett M. Baker, Dean of Students, and several subcommittees were established to map out a plan of campaign and work out the necessary details, which, in the months to come, would appear to be almost infinite in number.

An appropriate theme to be developed by internationally known speakers, would serve as a superstructure in developing the convocation program. From the first, the President of the United States and the Right Honorable Winston Churchill were on the list of eligible candidates to make major addresses if they would accept. Invitations to both were extended in December, and on February 11, in a joint statement from the White House and from M.I.T. the acceptances of Mr. Truman and Mr. Churchill were announced. But the pressure of duty weighs heavily on such public figures, and on March 21 press services carried the news that President Truman would be unable to fulfill his appointment in Boston. The President's inability to address the Convocation was amplified in a letter of March 25 addressed to Dr. Compton in which President Truman emphasized that the cancellation "was not a voluntary one but was a case of necessity." It was expected that President Truman would have discussed the role our nation expects science and scientists to play in the future — a topic of tremendous concern to those attending the convocation and of major interest to the millions who could have heard the President's address by radio.

To examine man's progress at mid-century a group of six panels was planned to discuss the material, spiritual, and intellectual aspects of the social implications of science. The world's most eminent scholars were sought for participation in these discussions and 31 came to Cambridge to deliver their addresses.

Representatives from major institutions of higher learning, as well as from the learned societies in the fields of the arts, science, technology and engineering would be asked to take active part in the inauguration. Large numbers of Alumni and other friends of M.I.T. who would not participate directly in the celebration were to be invited guests. For several weeks lists of Alumni, friends of M.I.T., and representatives from industry, commerce, and similar groups were prepared under the direction of Professor B. A. Thresher, '20, Director of Admissions. About 33,000 invitations were mailed out by the end of January. It was

**REGISTRATION**



*M.I.T. Photo*

*Registration of guests proceeded smoothly prior to and during the convocation as material for 18,000 was distributed in the lobby of the Rogers Building.*

evident that not all who were invited could, or would, attend the M.I.T. ceremonies. But when acceptances from almost 18,000 persons had been received, it was painfully evident that none of the Institute's facilities could possibly accommodate those who sought to attend one or another of the programed events. Worst of all, however, was the fact that nowhere in all of metropolitan Boston were indoor seating facilities adequate to accommodate at one time and one place all those who wished to attend. Even the Boston Garden, largest assembly hall in Boston, was limited by law to seat 13,909 and there were 17,500 applications for the major addresses. The overflow was accommodated in the Roekwell Athletic Cage in which about 3,500 persons saw and heard Winston Churchill make his address on March 31 and 3,000 were present on April 1 for Dr. Stassen's address. From the Boston Garden, audio and video television signals were transmitted to the Rockwell Cage where a 15 x 20 foot projection screen had been placed in operation by the Radio Corporation of America. Thus, once more, did applied science come to the rescue of man's dilemma.

Those apprised of the forthcoming events by way of a printed invitation had little to do but return a printed card indicating which events they wished to attend and whether or not hotel accommodations were required. After this form was returned to M.I.T. each guest was notified that his tickets could be obtained in the lobby of the Rogers Building on Wednesday, March 30, or any time during the three-day event. More than 9,000 registration packets for almost twice as many guests were efficiently and smoothly processed and most guests had their tickets by Wednesday evening. With his envelope of tickets the guest was free to enjoy the Institute's hospitality in whatever way he chose.

First general session of the convocation was at 3:30 P.M. in Rockwell Athletic Cage on Thursday, March 31, at which the opening address was given by Dean Burchard, chairman of the Convocation. Setting the tone for the convocation, Dean Burchard's address (which appears on page 401) also dealt with the general nature of the problems to be discussed by the six different panels and summarized on pages 420–425.

## RELAXATION

M.I.T. Photo

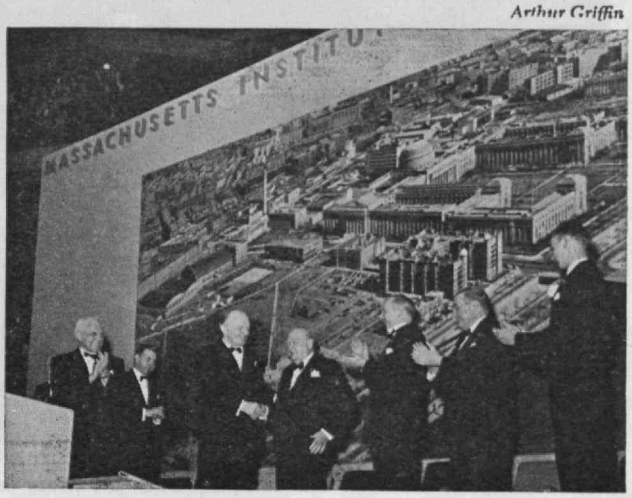
*John Fleetwood Baker, Professor of the University of Cambridge, chats informally in the Senior House with Henry R. Couch, '20, of the University of Rochester.*

Major address of the first session was that by Dr. Compton, entitled "The State of Science." No more eminently qualified person could be found to discuss this general topic, and the Review is happy to bring to its readers the full text of Dr. Compton's address (page 403).

The second general session of the convocation took place at the Boston Garden on the evening of March 31. Beginning at 8:15 the United States Marine Band provided a prelude of band music. For the next half hour the audience filed into the brilliantly lighted stadium until by 8:45, when the doors were closed, every available seat was taken. For the next 10 minutes there was an air of bristling interest coupled with controlled anticipation. Now the audience could survey the huge photographic mural at the rear of the speakers' platform, showing an aerial view of M.I.T. and Institute property on the Charles River. This mural is shown in the background of the photograph in the next column. As the Marine Band finished its last note, there

*Following the response to his appointment as honorary lecturer at M.I.T., Mr. Churchill receives a warm handshake from Dr. Stassen as Dr. Compton, Dr. Killian, Dean Burchard, Governor Dever, and Mr. Kirchner join in the applause.*

Arthur Griffin




## APPROBATION

was an orderly bustling around the entrance door to the left of the speakers' platform. Then, as bursts of light from photographers' flashlight bulbs darted out from one corner of the Garden, the former Prime Minister of Great Britain, the Right Honorable Winston Spencer Churchill, mounted the speakers' platform. He was greeted by a hearty and most enthusiastic applause as other distinguished guests – Bernard Baruch, Governor Paul A. Dever, Dr. Compton, Dr. Killian, Dean Burchard, Dean Baker, and John T. Toohy, President of the Senior Class – took their places on the rostrum.

Precisely at 9:00 P.M. Dr. Compton introduced Mr. Baruch, with whom he had worked during World War II, and Mr. Baruch, in turn, introduced Mr. Churchill. Of course Mr. Churchill needed no introduction, but the traditional courtesy was ably played by America's elder statesman who had been host in New York to the leader of His Majesty's Loyal Opposition.

Typewriters in the Press Section rattled away to bring newspaper readers everywhere the exact text of his address, and an account of events that evening in the Garden. Press photographers were busy making the photographs for the newspapers of the following day and several television cameras picked up video images to be relayed across the nation. For the occasion, polarized light sources reduced glare for the speakers without diminishing general illumination which was more than adequate for the needs of newsreel motion picture cameras.

It is possible to reconstruct only imperfectly, as above, the atmosphere and feeling of the occasion. The Review is pleased to direct the reader to page 409 of this issue for the text of the address delivered by Mr. Churchill.

Later in the evening, the Imperial Ballroom at the Hotel Statler was the scene of an assemblage of invited guests who had gathered for a reception in honor of Mr. Churchill. About 10:30 Dr. and Mrs. Compton, Dr. and Mrs. Killian, and the Right Honorable and Mrs. Churchill appeared on the balcony in the order given. Mr. Churchill spoke briefly but characteristi-

*Academic delegates ready to leave the Rogers Building for inaugural ceremonies in the Rockwell Athletic Cage.*

*M.I.T. Photo*

## PROCESSION

cally and appreciatively of the warm welcome he had received. When he had finished the assembled guests cried out, amid cheers, for a word from Mrs. Churchill. Most graciously Mrs. Churchill simply expressed her pleasure and appreciation at the affectionate tribute accorded to her husband.

Friday, April 1, dawned bright and clear, and those with parts to play in the day's celebration were up and about at an early hour. The six groups of panel speakers, together with their moderators and aides, made final preparations for the conduct of their respective sessions at a breakfast in the main dining room of the Ritz-Carlton Hotel in Boston, temporary residence of most of the panel speakers. By 10:00 A.M. the first sets of panel discussions were under way and afternoon panels assembled at 2:30 P.M. An account of the activities of these panel sessions is summarized on pages 420–425 of this issue and therefore need not be given here. It is sufficient to say that all panels sessions were well attended. Indeed the panel sessions held in Huntington Hall (which seats 530 persons) were more than filled to capacity. Those unable to find seats in Huntington Hall could hear the discussions by means of a public address system operating in a seminar room seating 150 persons, in the Great Court, and in the main lobby of Building 10.

Early in the evening of April 1, members of the M.I.T. Faculty joined academic delegates at a dinner at the Statler Hotel in honor of Mr. Churchill and President Harold E. Stassen of the University of Pennsylvania. A birthday cake with single candle was presented to Mrs. Churchill whose birthday falls on April 1, and the audience responded in birthday song. Then came the problem of transferring 1,250 dinner guests to the Boston Garden. The transportation problem was so ably managed by Professor John B. Wilbur, '28, Head of the Department of Civil and Sanitary Engineering, and the Metropolitan Transit Authority as to merit front page praise from Boston newspapers.

Under the very severe handicap of what was an 11th hour request for such an affair, Dr. Stassen graciously agreed to deliver an address on the evening of April 1 in place of Mr. Truman. His forceful, forward-looking address delighted his audience which packed the Boston Garden to capacity. Devoid of the Boston Garden atmosphere created by the 14,000 who heard him there, President Stassen's address is recorded in full beginning on page 415. For the record it is sufficient to add that Dr. Stassen was confronted with a difficult situation which he turned to advantage in delivering a most able and thought provoking address. There is no doubt but that his audience, like those administering the convocation, felt a deep sense of gratitude for President Stassen's cordial co-operation and his scholarly address.

Following Dr. Stassen's address, Otto E. Kirchner, Jr., '49, student member of the Inauguration Committee, presented Mr. Churchill with a gold Beaver key (see page 412) as a token of esteem from M.I.T. Students. Immediately thereafter, Dr. Killian conveyed to Mr. Churchill a scroll (see page 411) appointing him honorary lecturer at the Institute. To

## SUCCESSION

*Technology Review Photo*

*Following his formal induction into office as M.I.T.'s tenth president, Dr. Killian delivers his inaugural address.*

these expressions of esteem Mr. Churchill responded by indicating his pleasure at the recognition accorded him by Technology students and administration. He was pleased to observe that his appointment as honorary lecturer required no further services of him but stated that he might wish to avail himself of the opportunity his lectureship provided to return to Boston to address an M.I.T. audience in the future.

Thus ends the report of the convocation, the major addresses of which will be found in later sections of this issue. The summary of panel session begins on page 420. The inauguration story is recorded on page 426 and President Killian's inaugural address is the last major feature of this issue, as it was during the M.I.T. events.

No account of the convocation or the inauguration can be regarded as complete if it fails to recognize the magnificent part played by those who participated. Certainly all those who played a role – from those whose names appear frequently throughout this issue to the many whose numbers alone preclude individual mention in spite of important, if less spectacular tasks well executed – can take justifiable pride for their part in the conduct of an event without parallel in the history of the Massachusetts Institute of Technology.

# The New Social Mind

***"How ridiculous it would be for society to demand of scientists and engineers that they take full responsibility for the use of their discoveries and their designs."***

*By* **JOHN E. BURCHARD**

On behalf of the Corporation and the Faculty of M.I.T., I am privileged to welcome you to this our Mid-Century Convocation on the Social Implications of Scientific Progress. These three days are momentous in the history of this institution. As they go by we shall be erecting another milestone on our historical road. Here we shall say farewell, happily but a partial farewell, to a great man who has guided the destiny of our Institute for 20 years, guided it with imagination and conspicuous success, but who in addition to that will always be remembered by us with an affection which matches our respect. Here, in this same time, we shall welcome the new helmsman, a man of great promise, one whose energy, intelligence, judgment, and good will we admire not from afar nor as the result of hearsay, but from close at hand and as the result of personal experience.

These events in themselves would be significant enough but we have elected to make this milestone still more conspicuous. For some time now the world has been actively discussing the dilemmas presented to the human race by spectacular advances in applied science. With little discrimination some have called for a moratorium on science, some have asserted that science had no responsibility for the misuse of its achievements, and some have insisted that scientists should assume a much larger role in determining the final uses of their knowledge, to the end that science may be a benefit to society, not a bane. That is why it seemed appropriate to us to hold at this time a Convocation on the Social Implications of Scientific Progress. That is why we have invited you to join with us in discussing through these hours some of the major issues of the day, issues which are all influenced by, or even created by, an advancing technology but also issues none of which is even close to being exclusively technological. Your wholehearted response to our invitation has been stimulating. It has confirmed us in the notion that it would be significant to hold a conference on this subject at this time and in this place.

Nearly half a century ago, in 1905 to be precise, Henry Adams, a brilliant if lonesome American, was seeking answers to major questions of education. Though an historian by trade, and though professing scant understanding of science, Adams was perpetually curious and more informed than he liked to admit. Also he had a powerful intuition. Perhaps it was only the latter which prompted him so early to predict, from his knowledge of what was then coming out about radium, that we were in the dawn of an acceleration which would cause humanity to work very hard if it were to survive. Adams, like other prophets, was not always right in his assumptions. In the same days he said, for example, "If the acceleration, measured by the development and economy of forces, were to continue at its rate since 1800, the mathematician of 1950 should be able to plot the past and future orbit of the human race as accurately as that of the November meteoroids." The Convocation Committee has been unable to locate that mathematician and suspects that he does not exist. That is why we shall have to deal with these questions at less rigorous levels.

But Adams also did say, as we remind you in the printed program, when he was speaking of the acceleration of new forces and of the movement from unity to multiplicity, that "prolonged one generation longer, it would require a new social mind. . . . Thus far, since five or ten thousand years, the mind has success-

*Fabian Bachrach*

John E. Burchard, '23
*Chairman of the Convocation*

fully reacted, and nothing yet proved that it would fail to react – but it would need to jump." May our speculations in these next hours be imaginative and bold – may we essay at least part of the jump.

It is interesting to wonder for example what effect the writings of men like Adams, and the almost simultaneous scientific propositions of Einstein, had on the men of Whitehall and the Quai d'Orsay who were managing the world in those days. Did these ideas blow like a hurricane through the chancellories of Europe? They were hurricanish ideas. But such evidence as we find suggests no such implication. Did hundreds of writers hasten to warn society what was afoot? Certainly writers of popular science did not – writers of fiction, men like H. G. Wells, may have been more bold. But did anyone treat such concepts as anything but romance? And is anyone here prepared to assert that world planning took serious cognizance of the meaning of that work of 1905 many years before the actual events of Hiroshima or Nagasaki?

Was the time lag in this appreciation of the world implications inevitable? Was it harmful? If not inevitable and if harmful, are there better ways of organizing such things today? For we may be reasonably sure that we have not reached the end of the road, that we will not see any early moratorium on science, and that the consequences of future discoveries, wrongly used, will be even more forbidding than the consequences of the one big present threat which will not down. Without assuming any mantle of prophecy, it is meet to suggest that the early conquest of space is probable, that large-scale biological controls are possible and that ability to control man's thoughts with precision is by no means out of the question. Any of these is more awesome in its implications than was the mushroom cloud of 1945.

What are the circumstances under which discoveries, dominating discoveries, have been made? What was the moral and political climate in which natural science could thus flourish? Are the conditions changing or changed? Do they promise a more flourishing science or a less flourishing science?

Looking first backwards through the 50 years, we shall try in these days to examine some of the questions just propounded; and then go on, remembering what we can of the past that is useful, to discuss a half dozen current problems. The discussion of these problems may prove even more significant than is obvious. For in the solution of such problems in detail, it is possible that we shall find the solution to the greater apparent problem of bristling ideologies.

These problems are problems which have long been with the world; many of them have been discussed in antiquity and no doubt many of the things we shall say here could be found to have been said long ago and to lie now unread in some musty tome. But for our time it is necessary to explore them again. And so we shall ask ourselves tomorrow whether it is true that man has so destroyed the resources of his world, and been so clever about prolonging the span of his years, that, spawning ever afresh in geometric progression, he is doomed to die of starvation; in short, we shall attempt to discover whether the problem of world production to yield at least a minimum living to the whole population can be solved. Then, recognizing that even a world production at a satisfactory level will not suffice, we shall explore later how we may adequately bring about an equitable and benign world distribution, laying special emphasis on areas of the world which at the present time *we* regard as underdeveloped.

Adequately fed and clothed as the peoples of the world might become, would it be a decent world and one in which it was worth while to be well fed and well clothed if these animal satisfactions remained the sole accomplishments of man? We think not, and so will look too at matters of the spirit. Has the growth of science, no matter what its benefit to man in practical things, strangled something higher; what common faith can man have in days like ours; what position of personal confidence may the individual achieve in a day which sees the magnification of the power of large institutions almost by the minute?

And finally what shall we say of the education needed to bring about a wiser, a healthier, a safer, and a happier world? Is this to be found in specialization? Is there risk that in the process of creating brilliant specialists, we shall have created a race of educated ignoramuses as Ortega y Gasset likes to call us; a race in which the most important decisions made by man will ultimately have to be left to the meaner intellects because the stronger ones have all been distilled into one or another concentrated essence, each of which is incompatible with the other? Is there risk that in the growth of large organizations, and especially of government, the true free spirit of inquiry which has brought us thus far on our road will be diminished, or even extinguished altogether?

These are the six questions which we shall ask tomorrow. There are of course many other questions, equally important questions, which we shall not ask at all. Such omissions were inevitable if we were not to spread ourselves far too thin. Each has been the occasion of regret. The greatest regret perhaps is that this conference will not explore the meaning of contemporary art.

The omission has at least been deliberate, not accidental. This does not mean that the question seems unimportant. Rather it reflects our impression of the futility of comparable discussions of art in the last few years, discussions which have ranged over many days. Of them, one cannot but feel with Emily Dickinson when she wrote:

> I aimed my pebble, but myself
> Was all the one that fell.
> Was it Goliath was too large,
> Or only I too small?

Since no larger stones are to be cast at this target during this Convocation, may I be pardoned the venture of one little pebble.

There has perhaps never been a time in the history of man when his formal art has seemed to require more literary annotation. Certainly the great masses of Bach, the pictorial sculptures of the Gothic west fronts, the frescoes of the Fifteenth Century, needed no such explanation even to the common mind; certainly the secular painting of the later centuries was equally self-explanatory.

(*Continued on page 476*)

# The State of Science

***"I hold that science and technology are largely responsible for much that we find good in the world and are capable of being the common denominator of many things we seek to accomplish in the decades ahead."***

*By* **KARL T. COMPTON**

AS I contemplated the task of preparing for this occasion an evaluation of science at the mid-century, I quickly came to a conviction which became more firmly established as I proceeded, and which I shall now demonstrate to you. It is that I am inadequate for the task. I am reminded, by analogy, of the negro sprinter who when complimented on his running of 100 yards in nine and a half seconds, replied: "I could run that race in nine seconds if it wasn't for the longness of the distance and the shortness of the time." I am handicapped by the bigness of the subject and my capacity to do it justice.

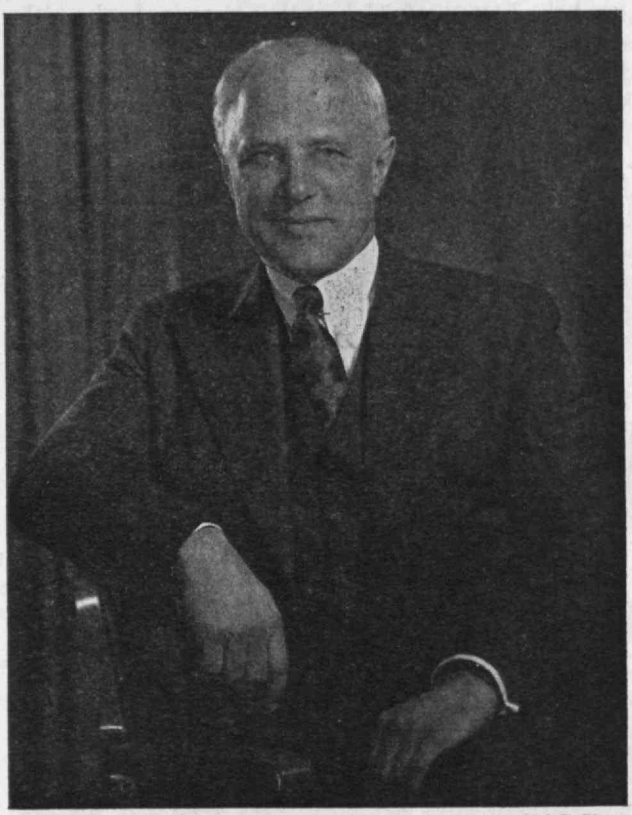
Were I a Man from Mars, visiting our planet à la Orson Welles, I should have certain advantages. In the first place I should undoubtedly be very intelligent, else I could not have contrived to make the journey and to land safely. In the second place I could view this earthly scene objectively. For the attempt to stand off, in time or space, and survey objectively our accomplishments and our shortcomings is a difficult one. Our sincerest efforts toward objectivity are unconsciously colored, not only by our own convictions and philosophy, but by those fields to which we have allied ourselves, so that the statesman tends to view everything first as a political problem; the priest, as a spiritual one; the economist, as a social one; and the scientist, as a problem for his laboratory. Nor am I, as we shall see later, an exception to this rule.

But for the moment, let us look at the world through the eyes of the Man from Mars. This, his latest invasion, is timed for the rounding of the mid-century, an accounting time when one tends to review the past for the progress made to date and to contemplate the future speculatively as to what may lie ahead.

Let us suppose our Martian had prepared himself for his trip by a study of history. He would first of all be struck by the long existence of the earth itself as a physical entity in contrast to the brief span of time in which man has played a significant role, an estimated two to three billions of years for the earth, and a brief million and a half for man. He would be further astonished by the tiny fragment of time we call "history" in contrast to the endless millennia of prehistory. He would note that all that modern man knows of prehistoric man has been cleverly deduced from the mute evidence left by his ancestors, often hidden in caves and dried river valleys. And finally he could not fail to be astonished by the unequal march of history itself – the long eras during which man fought and struggled and moved along, to the slow pedestrian pace of two or four miles per hour – in contrast to this century in which he has accelerated his pace until it has exceeded the speed of sound.

Our Martian's perusal of history would have acquainted him with the various stages of civilization and culture through which man has passed – the nomadic civilization of the early Semitic tribes, the intellectual ages of Greece and Rome, the primitive agrarian culture of the Middle Ages, the emergence of the crafts and guilds, the cultural renaissance of the Western world, and the rise of exploration and sea travel. And finally, he would view with some astonishment, no doubt, the industrial revolution of the last 100 years and its kaleidoscopic impact on succeeding decades.

But he would be unprepared, I think, in his global survey, for the strange inconsistencies and incongruities of the modern world. Having observed in his



*M.I.T. Photo*

Karl T. Compton
*Chairman, M.I.T. Corporation*

study of history a slow progression through nomadic, agrarian, handicraft, and industrial stages of economy, he would likely be surprised to find examples of all these stages still extant in various parts of the world. Or, if he had been particularly interested in the social and political emergence of man, how would he account for the vestigial remains of ancient tyranny, the oppressive burden of autocratic rule, still existing side by side with the democracies of the modern world? In short, to borrow a figure from the biologists, he would find our present-day civilization the phylogenesis of human history.

We might assume that this Mid-Century Convocation on the Social Implications of Scientific Progress, which opens today, has convened for the purpose of explaining to the Man from Mars the achievements, the trends, the problems, and the anomalies of our times. And in so doing perhaps we shall gain for ourselves a better understanding of the multiplicity of forces which have a bearing on our lives and so achieve a better orientation for the resolution of those discords that threaten further progress.

For my part, I am happy to be today the special pleader for the role of science in modern society. For I hold that science and technology are largely responsible for much that we find good in the world and are capable of being the common denominator of many things we seek to accomplish in the decades ahead.

To our visitor from Mars, I would point out that the scientist and engineer are busy not only in the laboratory and library but in many strange places on, above, and below the surface of the earth. On one of the highest peaks in America, one group of scientists measures the effects of cosmic radiation, while many feet below the surface of the earth, in a dark tunnel or at the bottom of a lake, other groups check on the cosmic bullets that pierce the surface of the earth. In bathyspheres as strange in appearance as though they themselves had come from Mars, men try new fathoms of the ocean depths. And missiles of extraordinary shape and size hurtle hundreds of miles above the earth to seek new data on the upper atmosphere and the spheres that lie above it. So that if to our neighbor, Mars, we appear as a race of ants, busy with a complex and remarkable division of labor, we must also appear as the possessors of an extraordinary intellectual curiosity – examining every aspect of our tiny globe and then projecting ourselves beyond it into the infinities of space.

*Dr. Compton delivering his address on "The State of Science" at the opening session of the Convocation in Rockwell Cage. Seated on the platform* (left to right) *are: Everett M. Baker, Dean of Students and chairman of the Inauguration Committee; Dr. Killian, President of M.I.T.; and John E. Burchard, '23, Dean of Humanities and chairman of the Convocation. Flags of nationals taking part in the panel discussions are displayed.*

*M.I.T. Photo*

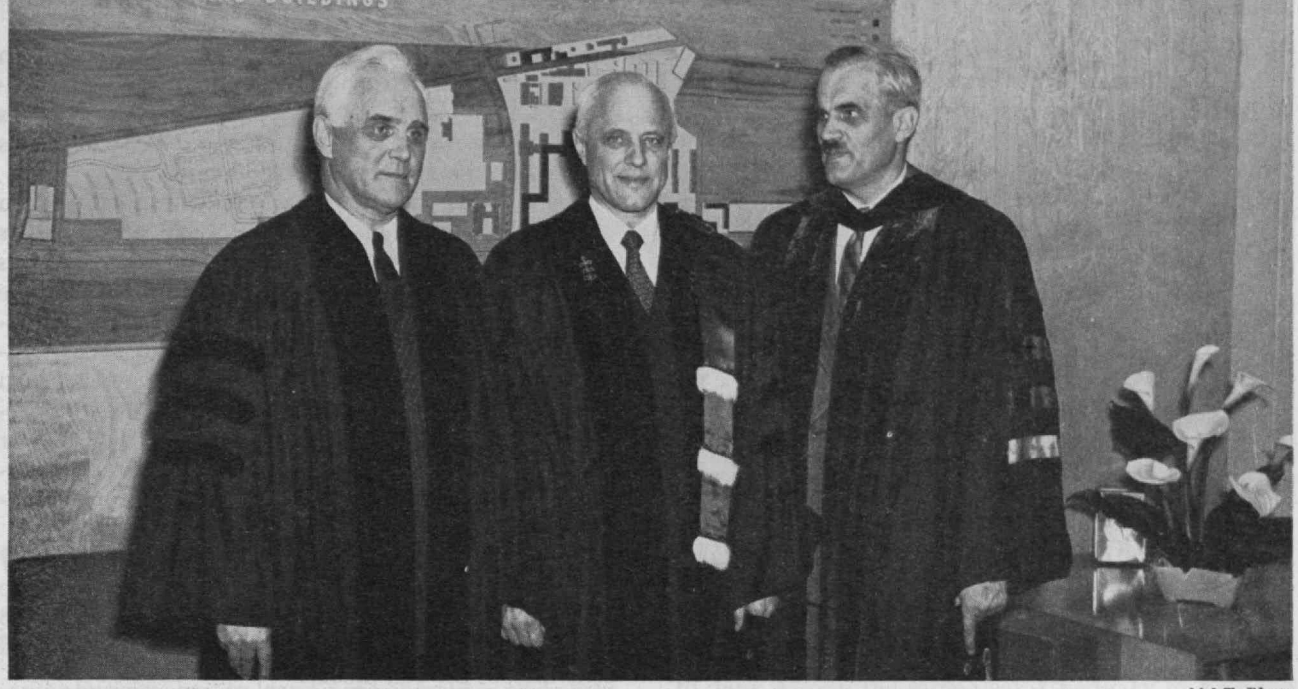
The marvels thus uncovered have been so numerous and so dazzling in recent years that we have come to accept each new announcement with a certain complacency, almost indifference, as though nothing were to be wondered at. Yet these things to which we adjust ourselves so quickly as to be almost unconscious of change, and which we quickly come to count as necessities and "rights" of life, are often things which were entirely unknown to our parents or grandparents.

It is not inappropriate then, that we should take stock, at the mid-century, of exactly where we do stand in scientific achievement and of what is yet to be accomplished. For the scientist is not apt to find himself in the predicament of Alexander the Great, who wept because there were no more worlds to conquer. We shall see, I think, that much needs to be done on an ever-widening scale toward meeting the physical needs and opportunities facing mankind and that science is responsive, also, to those who see in it a method of approach to the deeper social problems of our times.

In assessing the status of science and society today, it is a temptation to use as a point of comparison the middle of the last century. Politically, the world then turned in an aura of unrest, not unlike that in which we now find ourselves. The revolutions which had swept across Central Europe in 1848 with an upsurge of liberalism and self-determination had been succeeded by counterrevolutions and strong reaction of 1849 and 1850. To those seekers of freedom who had sought to introduce new concepts of human rights into the ancient monarchies of Europe, it must have seemed that their work and sacrifices had been in vain. The efforts for a democratic federation of states in Germany had failed; Austria had regained its autocratic domination of Central Europe; and the progress that had been made in Italy had been lost in the tide of reaction.

Men like Garibaldi, Lamartine, and Louis Kossuth became the displaced persons of their day, and many of them sought refuge in the United States. Yet though all may have seemed lost to these valiant liberals, the receding tide of revolution had left its mark, and the smell of change was in the air.

In Great Britain, Queen Victoria had only just completed the first decade of her long reign. Things were relatively stable politically, and the industrial revolution had passed its first phase. The long train of miserable social conditions, which the first impact of the machine age had brought to the working classes, had only begun to be ameliorated. But thanks to the zeal of social reformers and enlightened industrialists, such as Robert Owens, Britain was learning how better to utilize this vast new giant in its midst and, above all, was coming to realize that economic stability was in-



M.I.T. Photo

*Among university heads in attendance at President Killian's inauguration was the famed trio of Compton brothers. In reading order are: Wilson Martindale Compton, President of the State State College of Washington; Karl Taylor Compton, Chairman of the Corporation of M.I.T.; and Arthur Holly Compton, Chancellor of Washington University and winner of the Nobel Prize for physics in 1927.*

timately associated with well-being, and that increased ability to produce on the part of working people was basic to any improvement in their standards of living.

It is hard for us now to realize from what depths these living standards have risen, thanks to those applications of science which produced the machine age. Just prior to the introduction of steam power, men, women, and children labored between 14 and 16 hours a day in poorly equipped factories; enjoyed no transportation of any kind; lived in windowless and unheated homes; and could not afford the luxury of candlelight because candles were taxed. Even the least fastidious today would be horrified at the unhygienic conditions which everywhere prevailed in the absence of even the most primitive types of sanitary facilities. In the long, six-day weeks there was neither money nor leisure for any kind of recreation. The average number of a man's acquaintances during his entire lifetime was of the order of only 100. Intellectual and cultural activities among the poor were unheard of. The rate of infant mortality was enormous and estimated life expectancy was 30 years. Moves to better these conditions can be traced in part to the strong emotional appeal of such tales as *Oliver Twist, Bleak House,* and *Martin Chuzzlewit.*

In 1850 the first industrial exposition in the world was held in the Crystal Hall in London under the patronage of Queen Victoria and the Prince Consort.

For the United States, which abounded in its great expanses of unexploited land and endless national resources, there were no very difficult adjustments to make to get into the swing of the industrial revolution. It was just coming into full stride as a nation. Politically the sectional strife between the abolitionist North and the slave-holding South had come to an uneasy lull, based upon the compromise of 1850. For the time being, violently partisan points of view were submerged by the common desire to take advantage of a rapidly expanding economy.

Arthur M. Schlesinger in his chapter on Mid-Century America* gives us the following picture of mid-century economy:

> The amount of capital invested in manufacturing (including fisheries and mines) doubled, totaling more than a billion dollars on the eve of the Civil War. First in order of importance was the making of flour and meal, then boots and shoes, cotton textiles, and lumber products, with clothing, machinery, leather and woolen goods forging rapidly to the fore. In 1849, for the first time, the patents granted for new inventions passed the thousand mark, to reach nearly six times that number in 1860.

He also points out that "of the new mechanisms employed in industry the census officials in 1860 characterized the sewing machine as an altogether 'revolutionary instrument.'" From where we stand today, it is difficult to realize that a century ago perhaps the most significant tool in American industry was the sewing machine.

With respect to science and invention, the world at the last mid-century stood at the threshold of far-reaching and significant discoveries which were to render the ensuing century unparalleled in human progress.

Whitehead has observed that the greatest invention of the Nineteenth Century was the invention of the method of invention. He goes on to say, "in order to understand our epoch, we can neglect all the details of change, such as railways, telegraphs, radios, spinning machines, and synthetic dyes. We must concentrate on the method itself, that is the real novelty which has broken up the foundations of the old civilization. The prophecy of Francis Bacon has now been fulfilled; and man, who at times dreamt of himself as a

* *Political and Social History of the United States.* (New York: Macmillan Company, 1933), $3.00.

little lower than the angels, has submitted to become the servant and minister of nature."

In physics, at the last mid-century, the scientific world stood firmly on the solid foundation of Newtonian mechanics, unaware that just ahead a series of events was taking shape which would effect a revolution in traditional thinking. In electricity, the basis had been laid by Franklin and Volta, while Oersted, Faraday, and Henry had shown the relation between electricity and magnetism. Fresnel had established the wave theory of light, and Joule had just proven the equivalence of heat and work.

But in 1850 the great evolution of the science of physics was about to begin. Robert A. Millikan summarized these events last year on the occasion of the centennial of the American Association for the Advancement of Science by mentioning three great advances: (1) the establishment by Joule, Kelvin, Mayer, and Helmholtz of the first and second laws of thermodynamics; (2) the quantitative proof of the kinetic theory of gases by Clausius, Boltzmann, and Maxwell; and (3) the publication by Maxwell in 1867 of his classic paper on electromagnetism. Millikan calls Maxwell "the greatest ornament of his age" and points out that "Maxwell's book has created the present age of electricity in much the same way in which Newton's *Principia* created, a hundred years earlier, the mechanical age in which we are still living."

The century drew to a close with four very great discoveries which have profoundly affected our own times. They are: (1) Roentgen's discovery of x-rays in 1895; (2) Becquerel's discovery of radioactivity in 1896; (3) J. J. Thomson's demonstration in 1897 of the electron as a fundamental constituent of all the atoms in the universe; and (4) the quantum theory of radiation enunciated by Planck in Berlin in 1900.

During the period in which such strides were being made in physics, the other sciences, notably chemistry, biology, and medicine, were not standing still. But, whereas research in physics had enjoyed a steady growth for the two centuries preceding the opening of the Nineteenth, the other sciences lagged somewhat in their development. This was partly because in both chemistry and biology there was a strong tendency to cling to the classical teachings of the past. But, more significantly, progress in these fields and in medicine also was dependent to a large extent on the tools and processes being evolved by modern physics.

If one were to review even a partial list of the great names in the growth of chemistry prior to this century, it would be necessary to mention the Norwegians, Guldberg and Waage, who stated the law of mass action; the great Swedish chemist, Arrhenius, who advanced the theory of electrolytic disassociation; and the American, Willard Gibbs, whose phase rule contributed so much to the development of industrial chemistry. There would be the Russian, Mendeleev, who first classified the elements in the periodic table, and the Polish Marie Curie who, with her French husband, Pierre, made the important discovery of radium. Von Liebig and Wöhler would stand for organic chemistry and mention should be made of Hofmann, who may be regarded as the father of the German dye industry. To aspiring young scientists of today it should be of interest to note that one of Hofmann's students, W. H. Perkin, a boy of 17, is credited with discovering the first synthetic dye. The chemical industry in the United States today owes much of its start to basic work in dyes and synthetics which was done in Germany prior to World War I.

The emphasis which modern industry and modern warfare also have laid upon physical sciences has tended to obscure somewhat in the public eye the less spectacular advances of biology and medicine. The use of atomic power for both constructive and destructive purposes has greater interest for the public imagination than that mysterious process by which green plants convert the energy of the sun into the substance of life. But who can say whether the answer to the secret of photosynthesis may not have more far-reaching effects on our lives and on those of generations to come?

Kenneth Mees, whose book, *The Path of Science*,† presents a succinct review of the growth of scientific ideas, places the beginning of modern biology in 1838 with the publication by two Germans, Schleiden and Schwann, of the cell theory.

Biological sciences received enormous impetus from the publication in 1859 of Darwin's *Origin of Species*, but Darwin died without ever learning of the important work of Gregor Mendel whose great study of heredity shed such interesting light on Darwin's theories. The science of genetics which rests upon the foundation so brilliantly laid by Mendel owes much to Belgian zoologist Beneden who discovered the double sets of chromosomes in each nucleus except the reproductive cells.

It was also in this latter half of the Nineteenth Century that the great German pioneer bacteriologist, Robert Koch, discovered the bacilli of anthrax and tuberculosis, that the great French chemist, Louis Pasteur, did his pioneering work on germs and ferments, and the British Lord Lister developed antiseptic surgery.

Astronomy at the end of the Nineteenth Century was largely observational, with the discovery and cataloging of stars and nebulae, examination of the appearance of sun and planets, and precise calculations of orbits. Stellar spectra and brightness were measured with routine persistence but without interpretive theories to guide and give significance to the observations.

In the foregoing sketch of science up to the beginning of our Twentieth Century I have made no attempt at complete coverage; I have even omitted entire fields of science, like geology and psychology. I have not discussed practical applications, like engineering and medicine. I have only used these few examples to serve as springboards for the jump into the Twentieth Century, in which scientific progress has forged ahead with ever increasing acceleration and in which the fields of science, hitherto almost separate in their development, have merged more and more toward a single all-inclusive and all-interrelated science of the forces and materials of nature.

The physicists and the chemists both started their Twentieth-Century research with the atom. The physicists have looked into the atom to discover how it was constructed and how its parts behaved. The chemists

† New York: John Wiley and Sons, Inc., 1947. $3.00.

M.I.T. Photo

*The inaugural procession begins as Chief Marshal C. George Dandrow, '22, President of the Alumni Association, passes between an honor guard of seniors flanking Drs. Compton and Killian* (left) *and 200 members of the Senior Class representing the Technology student body* (right).

piled atoms together to form molecules of all degrees of complexity. The work of each reacted on the other, and physicists had to learn more chemistry and chemists more physics. And the discoveries of each provided new tools for both.

The major interest of physical science in the first dozen years of the century was in the attempt to explain natural phenomena by the behavior of electrons under the influence of electric forces. Such theories were very successful for some phenomena, and had some very important practical applications, namely, our entire modern electronics industry. But the electron alone was far from adequate to account for the universe.

Then Sir Ernest Rutherford proved that each atom has a heavy nucleus of positive electricity surrounded by electrons. Moseley in England proved by x-rays that these atomic nuclei are characterized by simple numbers: 1 for hydrogen, 2 for helium, 3 for lithium, and so on up to 92 for uranium – and these numbers were soon identified with the electric charge of the nucleus or the number of electrons outside it in the atom. Thus quantitative meaning was given to the periodic table of the chemists. Next, Bohr in Denmark and Sommerfeld in Germany applied the quantum theory to the Rutherford-Moseley atom and found the basis for explaining the spectra of light and x-rays. Henceforth spectroscopy became the most powerful tool for further atomic structure research, and such research became a major preoccupation of physicists in the 1920's.

But all during this time other scientists were experimenting with radioactivity, an interesting and puzzling subject whose only practical uses had been for making watch dials luminous, and treating with moderate success certain types of cancer. But when Rutherford in 1920 succeeded in transmuting one chemical element into another by bombarding it with fast particles from a radium source, and thus made real the ancient dream of the alchemists, a new era in science opened up. It opened slowly at first, and it was not until 1931 that such a transmutation was effected by use of a high-voltage machine. This was done by two pupils of Rutherford's in Cambridge University. In that same year Ernest Lawrence at the University of California invented the cyclotron, which has proved the most productive of all atom-smashing machines to date. Also in the same year, Chadwick in England discovered another very important subatomic particle, the neutron. And still in that same year Fermi in Italy showed that neutrons are extremely potent in producing atomic transmutations in the atoms which they strike.

The quick result of the atomic nuclear research stimulated by these discoveries was the new discovery, or production in the laboratory, of more than twice as many new species of atoms as had been previously known to exist. Furthermore, whereas it was formerly thought that only a very few of the heaviest types of atoms were radioactive, it is now possible in these atom-smashing machines to produce at least one radioactive modification, or isotope, of every kind of chemical atom, and several radioactive modifications in many cases.

Now we jump to the fateful time, just 10 years ago, when the discovery of nuclear fission opened the way to the atomic bomb and atomic energy. In early January, 1939, two Germans, Hahn and Strassmann, found that an isotope of barium is produced when uranium is bombarded by neutrons. This news promptly reached Copenhagen, where it was given the true explanation as being a hitherto unsuspected phenomenon, nuclear fission, by two refugee scientists, Frisch and Lise Meitner, who had fled Germany to work with the great Danish physicist, Niels Bohr.

On January 19, Bohr arrived in the United States to deliver some lectures, and brought with him the news of this discovery of nuclear fission. By January 26 this discovery had been confirmed in four United States laboratories, in Copenhagen, and in France, and there had been a scientific conference on the subject in Washington. All this had happened within the short space of less than one month. By the end of a year more than 100 scientific articles on nuclear fission had been published.

Then, in 1940, the clouds of war shrouded the further developments in a degree of secrecy never before imposed in the field of science. This secrecy was at first entirely self-imposed by the scientists themselves, who

(*Continued on page 460*)

# The Twentieth Century - ITS PROMISE AND ITS REALIZATION

***"Those whose minds are attracted or compelled to rigid and symmetrical systems of government should remember that logic, like science, must be the servant and not the master of man."***

*By* **WINSTON CHURCHILL**

I AM honoured by your wish that I should take part in the discussions of the Massachusetts Institute of Technology. We have suffered in Great Britain by the lack of colleges of university rank in which engineering and the allied subjects are taught. Industrial production depends on technology and it is because the Americans, like the prewar Germans, have realized this and created institutions for the advanced training of large numbers of high-grade engineers to translate the advances of pure science into industrial technique, it is for that reason that their output per head and consequent standard of life are so high. It is surprising that England, which was the first country to be industrialized, has nothing of comparable stature. If tonight I strike other notes than those of material progress, it implies no want of admiration for all the work you have done and are doing. My aim, like yours, is to be guided by balance and proportion.

The outstanding feature of the Twentieth Century has been the enormous expansion in the numbers who are given the opportunity to share in the larger and more varied life which in previous periods was reserved for the few and for the very few. This process must continue at an increasing rate. If we are to bring the broad masses of the people in every land to the table of abundance, it can only be by the tireless improvement of all our means of technical production, and by the diffusion in every form of education of an improved quality to scores of millions of men and women. Yea, even in this darkling hour I have faith that this process will go on. I rejoice in Tennyson's celebrated lines:

> Men, my brothers, men, the workers, ever
> reaping something new;
> That which they have done but earnest of the
> things that they shall do.

I was, however, a little disquieted, I must admit, that you find it necessary to debate the question, to quote Dean Burchard's opening address, "whether the problem of world production yielding at least a minimum living to the whole population can be solved, and whether man has so destroyed the resources of his world that he may be doomed to die of starvation." If, with all the resources of modern science, we find ourselves unable to avert world famine, we shall all be to blame, but a peculiar responsibility would rest upon the scientists. I do not believe they will fail, but if they do, or perhaps were not allowed to succeed, the consequences would be very unpleasant because it is quite certain that mankind would not agree to starve equally, and there might be some very sharp disagreements about how the last crust was to be shared. This would simplify our problem, as our greatest intellectual authorities here will readily admit, in an unduly primordial manner.

I frankly confess that I feel somewhat overawed in addressing this vast scientific and learned audience on the subject which your panels are discussing. I have no technical and no university education, and have just had to pick up a few things as I went along. Therefore I speak with a diffidence, which I hope to overcome as I proceed, on these profound scientific, social, and philosophic issues, each of which claims a lifelong study for itself, and are now to be examined, as schoolmen would say, not only in their integrity but in their relationship, meaning thereby not only one by one but all together.

I was so glad that in the first instance you asked me to talk about the past rather than to peer into the future because I know more about the past than I do about the future, and I was well content that the President of the United States, whose gift of prophecy was so remarkably vindicated by recent electoral results, should have accepted that task. We all regret that his heavy State duties prevent him from being here tonight. I shall therefore have to try to do a little of the peering myself.

For us in Britain, the Nineteenth Century ended amid the glories of the Victorian era, and we entered upon the dawn of the Twentieth in high hope for our country, our Empire, and the world. The latter and larger part of the Nineteenth Century had been the period of liberal advance (liberal with a small "l"). In 1900 a sense of moving hopefully forward to brighter, broader, easier days predominated. Little did we guess that what has been called the Century of the Common Man would witness as its outstanding feature more common men killing each other with greater facilities than any other five centuries put together in the his-

*The illustration on the opposite page gives ample evidence that a capacity audience crowded Boston Garden on March 31 when Mr. Churchill made his address. Seated on the speakers' platform* (far to near) *are: Dean Baker, Bernard M. Baruch, Governor Paul A. Dever, President Killian, Dr. Compton, Dean Burchard, and the Senior Class President, John T. Toohy. The United States Marine Band faces the center section of guests and M.I.T. administrators. The right-hand section includes television cameramen, press reporters, and photographers. Broadcasting and recording groups are seated along the wall, left of police and other protective personnel.*

The Tech

*Against the photographic mural background of the Institute, President Killian smilingly shakes hands with Mr. Churchill who has just been appointed honorary lecturer of M.I.T. Mr. Churchill has also just been awarded the Beaver Key by Otto E. Kirchner, Jr., '49, speaking for the Institute's student body. In the background, Dr. Compton, Dean Burchard, and Governor Dever join in the applause. An interesting aspect of this illustration is that the original photograph was made by Hasbrouck Fletcher, '51, staff member of the student newspaper,* The Tech.

tory of the world. But we entered this terrible Twentieth Century with confidence. We thought that with improving transportation nations would get to know each other better. We believed that as they got to know each other better they would like each other more, and that national rivalries would fade in a growing international consciousness. We took it almost for granted that science would confer continual boons and blessings upon us, would give us better meals, better garments, and better dwellings for less trouble, and thus steadily shorten the hours of labour and leave more time for play and culture. In the name of ordered but unceasing progress, we saluted the age of democracy expressing itself ever more widely through parliaments freely and fairly elected on a broad or universal franchise. We saw no reason then why men and women should not shape their own home life and careers without being cramped by the growing complexity of the State, which was to be their servant and the protector of their rights. You had the famous American maxim "Governments derive their just powers from the consent of the governed," and we both noticed that the world was divided into peoples that owned the governments and governments that owned the peoples. At least I heard all this around that time and liked some of it very much.

I was a Minister in the British Liberal Government (with a large "L" please this time), returned with a great majority in 1906. That new Liberal Government arrived in power with much of its message already delivered and most of its aims already achieved. The days of hereditary aristocratic privilege were ended or numbered. The path was opened for talent in every field of endeavour. Primary education was compulsory, universal and free, or was about to become so. New problems arising, as problems do from former successes, awaited the new Administration. The independence of the proletariat from thralldom involved at least a minimum standard of life and labour and security for old age, sickness, and the death of the family breadwinner. It was to these tasks of social reform and insurance that we addressed ourselves.

The name of Lloyd George will ever be associated in Great Britain with this new departure, and I am proud to have been his lieutenant in this work and also, later, as a Conservative Chancellor of the Exchequer and later, still, as head of the wartime National Coalition to have carried these same themes forward on a magnified scale.

That is how we began the century. Science presently placed novel and dangerous facilities in the hands of the most powerful countries. Humanity was informed that it could make machines that would fly through the air and vessels which could swim beneath the surface of the seas. The conquest of the air and the perfection of the art of flying fulfilled the dream which for thousands of years had glittered in human imagination. Certainly it was a marvelous and romantic event. Whether the bestowal of this gift upon an immature civilization composed of competing nations whose nationalization grew with every advance of democracy and who were as yet devoid of international organization, whether this gift was a blessing or a curse has yet to be proved. On the whole I remain an optimist. For good, or for ill, air mastery is today the supreme expression of military power, and fleets and armies, however vital and important, must accept a subordinate rank. This is a memorable milestone in the march of man.

The submarine, to do it justice, has never made any claim to be a blessing or even a convenience. I well remember when it became an accomplished fact of peculiar military significance to the British Isles and to the British Navy, there was a general belief even in

the Admiralty where I presided, that no nation would ever be so wicked as to use these underwater vessels to sink merchantmen at sea. How could a submarine, it was asked, provide for the safety of the crews of the merchant ships it sank, and public opinion was shocked when old Admiral Fisher bluntly declared that this would be no bar to the submarine being used by the new and growing German Navy in the most ruthless manner. His prediction was certainly not stultified by what was soon to happen.

Here then we have these two novel and potent weapons placed in the hands of highly nationalized sovereign States in the early part of the Twentieth Century, and both of them dwell with us today for our future edification.

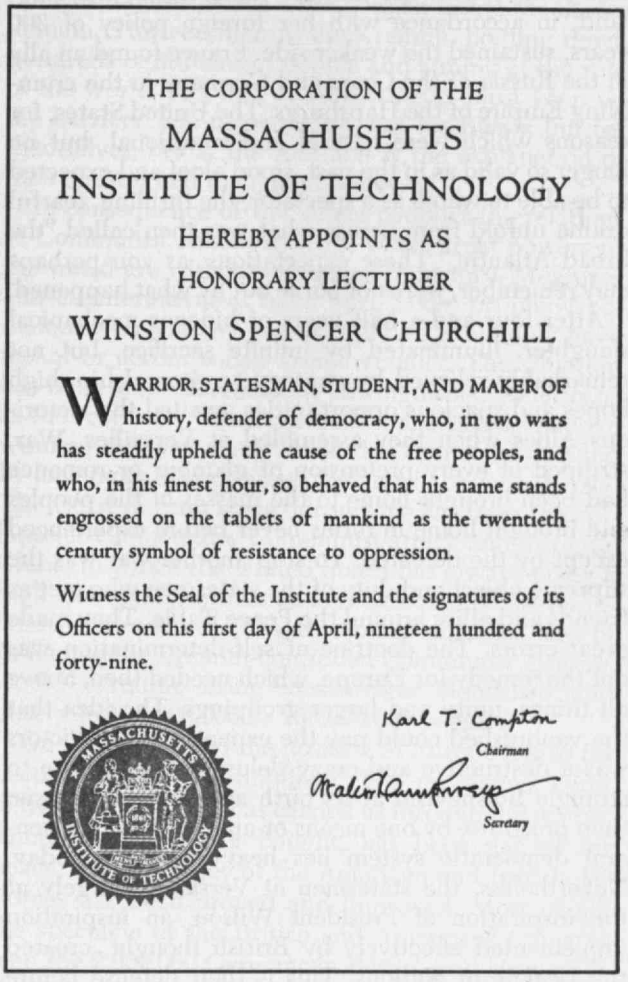
A third unmeasured sphere opened to us as the years passed, which, for the sake of comprehensive brevity, I will describe as radar. This radar, with its innumerable variants and possibilities, has so far been the handmaiden of the air, but it has also been the enemy of the submarine, and in alliance with the air may well prove its exterminator. Thus we see the changes which were wrought upon our society.

In the first half of the Twentieth Century, fanned by the crimson wings of war, the conquest of the air affected profoundly human affairs. It made the globe seem much bigger to the mind and much smaller to the body. The human biped was able to travel about far more quickly. This greatly reduced the size of his estate, while at the same time creating an even keener sense of its exploitable value. In the Nineteenth Century Jules Verne wrote *Round the World in Eighty Days*. It seemed a prodigy. Now you can get round it in four; but you do not see much of it on the way. The whole prospect and outlook of mankind grew immeasurably larger, and the multiplication of ideas also proceeded at an incredible rate. This vast expansion was unhappily not accompanied by any noticeable advance in the stature of man, either in his mental faculties, or his moral character. His brain got no better, but it buzzed the more. The scale of events around him assumed gigantic proportions while he remained about the same size. By comparison therefore he actually became much smaller. We no longer had great men directing manageable affairs. Our need was to discipline an array of gigantic and turbulent facts. To this task we have certainly so far proved unequal. Science bestowed immense new powers on man, and, at the same time, created conditions which were largely beyond his comprehension and still more beyond his control. While he nursed the illusion of growing mastery and exulted in his new trappings, he became the sport and presently the victim of tides, and currents, of whirlpools and tornadoes amid which he was far more helpless than he had been for a long time.

Hopeful developments in many directions were proceeding in 1914 on both sides of the Atlantic and they seemed to point to an age of peace and plenty when suddenly violent events broke in upon them. For more than 20 years there had been no major war in Europe. Indeed since the Civil War in the United States, there had been no great struggle in the West. A spirit of adventure stirred the minds of men and was by no means allayed by the general advance of prosperity and science. On the contrary prosperity meant power, and science offered weapons. We read in the Bible, and I hope you still read the Bible, "Jeshurun waxed fat and kicked."

For several generations Britannia had ruled the waves – for long periods at less cost annually than that of a single modern battleship.

History, I think, will say that this great trust was not abused. American testimony about the early period of the Monroe Doctrine is upon record. There was the suppression of the slave trade. During our prolonged naval supremacy undeterred by the rise of foreign tariffs, we kept our ports freely open to the commerce of the world. Our Colonial and Oriental Empire, even our coastal trade, was free to the shipping of all the nations on equal terms. We in no way sought to obstruct the rise of other states or navies. For nearly the whole of the Nineteenth Century the monopoly of sea power in British hands was a trust discharged faithfully in the general interest. But in the first decade of the Twentieth Century with new patterns of warships, naval rivalries became acute and fierce. Civilized governments began to think in dreadnoughts. It was in such a setting very difficult to prevent the First World War, far more difficult than it would have been to prevent the Second.


THE CORPORATION OF THE
MASSACHUSETTS
INSTITUTE OF TECHNOLOGY
HEREBY APPOINTS AS
HONORARY LECTURER
WINSTON SPENCER CHURCHILL

WARRIOR, STATESMAN, STUDENT, AND MAKER OF history, defender of democracy, who, in two wars has steadily upheld the cause of the free peoples, and who, in his finest hour, so behaved that his name stands engrossed on the tablets of mankind as the twentieth century symbol of resistance to oppression.

Witness the Seal of the Institute and the signatures of its Officers on this first day of April, nineteen hundred and forty-nine.

Karl T. Compton
Chairman
Secretary

*Reproduction, about one-third size, of the certificate appointing Mr. Churchill honorary lecturer. The initial "W" in the text is reddish-brown and the seal is gold. The text itself is black on cream parchment. The certificate was enclosed in a red leather folder with gray lining.*

*Reproduction, approximately full size, of the gold Beaver Key presented by students to Mr. Churchill by Otto E. Kirchner, Jr., '49, student member of the Inauguration Committee. At M.I.T. "the Beaver Key Society is an honorary Junior activity society, with the important function of being the greeting organization for visiting athletic teams." Certainly the Beaver Key spirit of good fellowship was adequately conveyed through the presentation of Mr. Kirchner.*

There was of course one way to prevent it – one way then as now – the creation of an international instrument strong enough to adjust the disputes of nations and enforce its decisions against an aggressor. Much wisdom, eloquent and earnest effort was devoted to this theme in which the United States took the lead, but they only got as far as the World Court at The Hague and improvements in the Geneva Convention. The impulses toward a trial of strength in Europe were far stronger at this time. Germany, demanding her "place in the sun," was faced by a resolute France with her military honor to regain. England, in accordance with her foreign policy of 300 years, sustained the weaker side. France found an ally in the Russia of the Czars and Germany in the crumbling Empire of the Hapsburgs. The United States, for reasons which were natural and traditional, but no longer so valid as in the past, stood aloof and expected to be able to watch as a spectator, the thrilling, fearful drama unfold from across what was then called "the broad Atlantic." These expectations, as you perhaps may remember, were not borne out by what happened.

After four and a half years of hideous mechanical slaughter, illuminated by infinite sacrifice, but not remarkably relieved by strategy or generalship, high hopes and spacious opportunities awaited the victorious Allies when they assembled at Versailles. War, stripped of every pretension of glamour or romance had been brought home to the masses of the peoples and brought home in forms never before experienced except by the defeated. To stop another war was the supreme object and duty of the statesmen who met as friends and allies around the Peace Table. They made great errors. The doctrine of self-determination was not the remedy for Europe, which needed then, above all things, unity and larger groupings. The idea that the vanquished could pay the expenses of the victors was a destructive and crazy delusion. The failure to strangle Bolshevism at its birth and to bring Russia, then prostrate, by one means or another, into the general democratic system lies heavy upon us today. Nevertheless, the statesmen at Versailles, largely at the inspiration of President Wilson, an inspiration implemented effectively by British thought, created the League of Nations. This is their defense before history, and had the League been resolutely sustained and used, it would have saved us all.

This was not to be. Another ordeal even more appalling than the first lay before us. Even when so much else had failed we could have obtained a prolonged peace, lasting all our lives at least, simply by keeping Germany disarmed in accordance with the Treaty, and by treating her with justice and magnanimity. This latter condition was very nearly achieved at Locarno in 1925, but the failure to enforce the disarmament clauses and above all to sustain the League of Nations, both of which purposes could easily have been accomplished, brought upon us the Second World War. Once again the English-speaking world gloriously but narrowly emerged, bleeding and breathless, but united as we never were before. This unity is our present salvation, because after all our victories, we are now faced by perils, both grave and near, and by problems more dire than have ever confronted Christian civilization, even in this Twentieth Century of storm and change.

There remains however a key of deliverance. It is the same key which was searched for by those who laboured to set up the World Court at The Hague in the early years of the century. It is the same conception which animated President Wilson and his colleagues at Versailles, namely the creation of a world instrument capable at least of giving to all its members security against aggression. The United Nations Organization which has been erected under the inspiring leadership of my great wartime friend, President Roosevelt, which took the place of the former League, has so far been rent and distracted by the antagonism of Soviet Russia and by the fundamental schism which has opened between Communism and the rest of mankind. But we must not despair. We must not despair. We must persevere, and if the gulf continues to widen, we must make sure that the cause of Freedom is defended by all the resources of combined forethought and superior science. Here lies the best hope of averting a third world struggle.

One of the questions which you are debating here is defined as "the failure of social and political institutions to keep pace with material and technical change." Scientists should never underrate the deep-seated qualities of human nature and how, repressed in one direction, they will certainly break out in another. The *genus homo* – if I may display my Latin – is a tough creature who has traveled here by a very long road. His nature has been shaped and his virtues ingrained by many millions of years of struggle, fear and pain, and his spirit has, from the earliest dawn of history, shown itself upon occasion capable of mounting to the sublime, far above material conditions or mortal terrors. He still remains man – still remains as Pope described him 200 years ago.

> Placed on this Isthmus of a middle State
> A being darkly wise and rudely great
> Created half to rise and half to fall
> Great Lord of all things, yet a prey to all,
> Sole judge of truth in endless error hurled,
> The glory, jest and riddle of the world.

In his introductory address, Mr. Burchard, the Dean of Humanities, spoke with awe of "an approaching scientific ability to control men's thoughts with precision." I shall be very content personally if my task in this world is done before that happens. Laws just or unjust may govern men's actions. Tyrannies may re-

strain or regulate their words. The machinery of propaganda may pack their minds with falsehood and deny them truth for many generations of time. But the soul of man thus held in trance or frozen in a long night can be awakened by a spark coming from God knows where and in a moment the whole structure of lies and oppression is on trial for its life. Peoples in bondage need never despair. Let them hope and trust in the genius of mankind. Science no doubt could if sufficiently perverted exterminate us all but it is not in the power of material forces in any period which the youngest here tonight need take into practical account, to alter the main elements in human nature or restrict the infinite variety of forms in which the soul and genius of the human race can and will express itself.

How right you are, Dr. Compton, in this great institution of technical study and achievement, to keep a dean of humanities in the gaining of which philosophy and history walk hand in hand. Our inheritance of well-founded slowly conceived codes of honour, morals and manners, the passionate convictions which so many hundreds of millions share together of the principles of freedom and justice, are far more precious to us than anything which scientific discoveries could bestow. Those whose minds are attracted or compelled to rigid and symmetrical systems of government should remember that logic, like science, must be the servant and not the master of man. Human beings and human societies are not structures that are built or machines that are forged. They are plants that grow and must be tended as such. Life is a test and this world a place of trial. Always the problems, or it may be the same problem, will be presented to every generation in different forms. The problems of victory may be even more baffling than those of defeat. However much the conditions change, the supreme question is how we live and grow and bloom and die, and how far each human life conforms to standards which are not wholly related to space or time.

And here I speak not only to those who enjoy the blessings and consolation of revealed religion but also to those who face the mysteries of human destiny alone. The flame of Christian ethics is still our highest guide. To guard and cherish it is our first interest, both spiritually and materially. The fulfillment of spiritual duty in our daily life is vital to our survival. Only by bringing it into perfect application can we hope to solve for ourselves the problems of this world and not of this world alone.

I cannot speak to you here tonight without expressing to the United States – as I have perhaps some right to do – the thanks of Britain and of Europe for the splendid part America is playing in the world. Many nations have risen to the summit of human affairs, but here is a great example where new-won supremacy has not been used for self-aggrandizement but only for further sacrifice.

Three years ago I made a speech at Fulton under the auspices of President Truman. Many people here and in my own country were startled and even shocked by what I said. But events have vindicated and fulfilled in much detail the warnings which I deemed it my duty to give at that time.

Today there is a very different climate of opinion. I am in cordial accord with much that is being done. We have, as dominating facts, the famous Marshall Aid, the new unity in Western Europe and now the Atlantic Pact. Let us inquire into that. The responsible ministers in all the countries concerned deserve high credit. There is credit enough for all. In my own country the Foreign Secretary, Mr. Bevin, who has come here to sign the Atlantic Pact, has shown himself indifferent to mere party popularity in dealing with these great national issues. He has shown himself, like many American public men, above mere partisan interest in dealing with these national and world issues. No one could, however, have brought about these immense changes in the feeling of the United States, Great Britain, and Europe but for the astounding policy of the Russian Soviet Government. We may well ask, "Why have they deliberately acted so as to unite the free world against them?" It is certainly not because there are not very able men among them. Why have they done it? It is because they fear the friendship of the West more than its hostility. They cannot – they cannot afford to allow free and friendly intercourse to grow up between the vast areas they control and the civilized nations of the West. The Russian people must not see what is going on outside, and the world must not see what goes on inside the Soviet domain. Thirteen men in the Kremlin, holding down hundreds of millions of people and aiming at the rule of the world, feel that at all costs they must keep up the barriers. Self-preservation, not for Russia but for themselves, lies at the root and is the explanation of their sinister and malignant policy.

In consequence of the Soviet conduct the relations of Communist Russia with the other great powers of the world are without precedent in history. Measures and countermeasures have been taken on many occasions which in any previous period could only have meant or accompanied armed conflict. The situation has been well described by distinguished Americans as the "cold war." And the question is asked, "Are we winning the cold war?" Well, this cannot be decided by looking at Europe alone. We must also look at Asia. The worst disaster since our victory has been the collapse of China under Communist attack and intrigue. China, in which the United States has always taken a high interest, comprises an immense part of the population of the world. The absorption of China and of India into the Kremlin-controlled Communist Empire, would certainly bring measureless bloodshed and misery to 800,000,000 or 900,000,000 people.

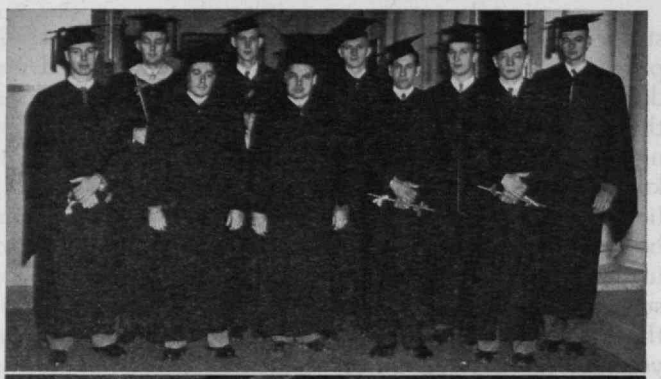
On the other hand the position in Europe has so far been successfully maintained. The prodigious effort of the Berlin Air Lift has carried us through the winter. Time, though dearly bought, has been gained for peace. The efficiency of the American and British Air Forces has been proved and improved. Most of all, the spectacle of the British and Americans trying to feed the 2,000,000 Germans in Berlin, in their zone in Berlin, while the Soviet Government was trying to starve them out, has been an object lesson to the German people far beyond anything that words could convey. I trust that small and needless provocations of

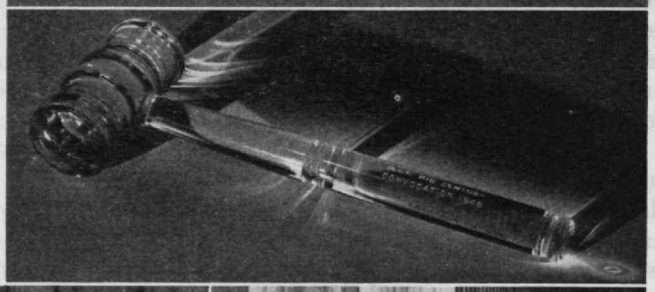
(*Continued on page 458*)

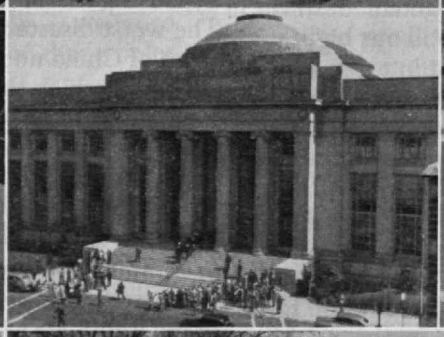
## *VIEWS IN REVIEW*

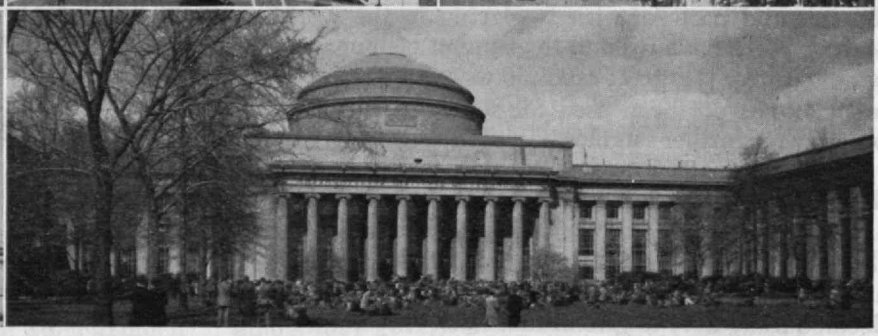
### *of Convocation and Inauguration*

*Top Row:* Honor guard of seniors at the inauguration.
*Second Row:* Plastic gavel which was presented to chairman of each meeting.
*Third Row:* (left) Lobby of Building 10; (center) luncheon in the new Senior House; (right) Merton M. Cory, Allen C. Conger, and Wallace Waterfall chat informally in the Senior House.
*Fourth Row:* (left) Luncheon group at Senior House includes John E. Pomfret, President, College of William and Mary, Professor and Mrs. George A. Baitsell of Yale; and Otto L. Mohr, Rector, University of Oslo; (center, in reading order) Ralph Lowell, Arthur A. Hauck, Horacio Figueroa, and Daniel L. Marsh; (right) portion of inaugural procession.
*Fifth Row:* (left) Academic delegates in procession in Rogers Building; (center) academic procession leaving Rogers Building; (right) academic procession approaching Rockwell Athletic Cage.
*Sixth Row:* (left) President Killian, Dr. Compton, and C. George Dandrow, '22, greet inauguration overflow group in the Great Court; (right) Great Court where 1,400 listened to inaugural ceremonies through public-address system.









# The Half Century Ahead

***"The concept of the natural rights of each man must give rise to a system that protects against oppression by either a group of rulers or by a majority itself."***

*By* **HAROLD E. STASSEN**

ALTHOUGH I appear tonight as you know, as an 11th-hour substitute for the President, I assume it is totally unnecessary for me to tell you, with a smile, that I do not speak for him, and that he is not responsible for anything I say this evening. I am certain, nevertheless, that I can speak for the President and for this vast audience and for the people of our country when I give a salute to M.I.T. for its amazing record of constructive, educational, and scientific accomplishment, and say best wishes, and Godspeed, to this great institution and to its able, modest, new president, Dr. James Killian.

I am supremely confident that in the same representative manner I may word a hearty and respectful welcome to these shores to that gifted and inspiring leader of the people of Britain in "their finest hour," that contemporary Shakespeare, Burke, and Nelson cast in one dramatic mold, the Honorable Winston Churchill.

It has been asked that I speak of the future, that I address my remarks toward the second half of this Twentieth Century which so shortly will begin. Let me respond I am not given to prediction, not even to a shorter-range prediction, especially after what happened November 2, 1948. Yet seriously I do recognize with you the importance of thinking ahead. I agree that at the mid-turn of a century, in this atmosphere of science, a searching inquiry into the humanities is important. I agree that the next 50 years is not too long a time to think about, when we reflect, that barring catastrophe, most of the undergraduates of M.I.T. and the other millions of our youth now engaged in study, will witness during their lifetimes this full half century of which we speak.

There are those who will say, why speak of a half century, when within a few years we either solve the whole world-wide question of relations of men, or see civilization die in the rubble of an atomic war! Others whisper that atomic destruction, with all its horrors, is but as a bow and arrow compared to the potential devastation of germ warfare. Still others say – and that is not all! No one is more keenly aware than I am of the vast capacity for catastrophe possessed by future war or more determined that mankind must find the way to prevent its occurrence. Yet I here declare that to say now that all thinking should begin and end upon this question of the prevention of a third world war is to introduce a note of sterility into our analysis. It is to shackle our minds at the very moment in history when it is most essential that they be unfettered.

I therefore state, in considered phrases, that if, God forbid, an atomic war does come, civilization will survive. If more than one future world war should come, with all the destructive force of every kind that is developed, civilization will yet survive. I say this bluntly, for I believe that the future course of man requires that there be a toughness of free minds, a searching, long-term thought upon future policy, a complete canvass of considered alternatives, and no blind spots or road blocks in our thinking. Terrible devastation and destruction and suffering can be dealt out, but, in my judgment, man can never fashion the means of destroying all men; man can never wipe out entirely throughout the world that curious combination of progress called civilization. Our first concern is not to be for places to hide. Our approach should not be one of either hysteria or resignation. Rather must we be determined that we will win through to freedom, that we will rebuild, we will go on, whate'er may come.

Before turning our eyes to the future, we gain perspective if we recall that when this century began 50 years ago, man had never flown. The first, feeble, fascinating flight by Orville Wright occurred in 1903. Man at the turn of the century moved heavily over land and slowly over sea. Thus handicapped, food moved with difficulty, lands were tilled laboriously. In the first decade of this century many many millions of people died of starvation and of plagues.

I need not speak of today's nonstop, refueled aerial circling of the world, of many flights at speeds above 500 miles an hour, of some faster than sound, of communication by radio covering the globe every day, of the rapid increase in the transmission of visual messages via television, of production – mass production – and its amazing totals, of medical science and its conquest of major epidemics. What then of the future? Should we not contemplate as a minimum, readily available nonstop travel to any point in the world, communication of message and of picture everywhere, and new energy sources removing old limitations?

Clearly the physical facts today, and in increasing degree, the projection of these facts, means that our thinking must be world-wide. And our thinking must give more consideration than ever before to the fundamental nature of man and the way in which he should live. This philosophic approach has greater validity than either an economic, social, military, or political approach, for it affects all these, and more too.

I talk of world-wide, fundamental concepts with humility, with hesitation. But I do hope that I may in

some degree stimulate and provoke others, through disagreement and agreement, through modification and amendment, through correction and projection, to contribute a larger measure to the unending dynamic process of thinking our way through to the course we should follow.

It is my view that there are in the world three major streams of philosophic thought as to the nature of man and the way in which he should live. Each is many centuries old. None is held purely and completely by any numerically appreciable group of the people on the earth. Each has felt the cross impact of the other. Each has received impetus, direction, modification from geographic and anthropological fact, from experience and circumstances, from scholarship, and from religion. The correct evaluation of these three streams, and the appropriate development of policies at home and abroad are of greater importance for the next half century than any other intellectual pursuits. These are the three.

The concept of the natural rights of man, that he was meant to be free, of his inherent worth and dignity, of his spiritual quality, of his relationship to God, and of his brotherhood to fellow man.

The concept of the subordinate status of man to man, of his possessing rights only as they are given to him by those in command of the society in which he lives, of might making right, of man's value limited to his material being, with no recognition of his spiritual value, and no God.

The concept of man's little worth, indifference to his rights and welfare, of mystical and primary concern for the hereafter, of life as a vale of tears or a period of suffering, of devotion to a rigid religion and callousness to the conditions of living.

These three might be termed the doctrines of the free and equal man, of the subservient and atheistic man, and of the apathetic and lowly man. Or they might be labeled the concepts of: liberty of man; order for man; and indifference to man. Each has a diverse and ancient background. None is held and implemented concisely and completely by any peoples.

There are some shreds of evidence of the welling up of the first stream of natural rights in the misty glimpses of the earliest history of civilization when the workers on the pyramids and on the drainage projects of the ancient Nile Valley demanded that not only Pharaoh's Court, but the workers too were entitled to the right to worship Ra, the Sun God, and receive the benefits therefrom, rather than to be limited to the worship of Osiris, God of the Earth and Underground. In any event the flow is clearly evident in ancient Athens, in the writings of Socrates and Plato and Aristotle with their unfolding views of justice and law. It is given major impetus by Christianity, in some respects by Judaism, and traces its development to the constitutionalism of ancient Rome, to Magna Carta, to Locke, to the founders of our own United States of America, to the Declaration of Independence, to the Bill of Rights, to Jefferson and to Lincoln, to cite a few examples.

This philosophy of the nature of man, as you recognize, has had predominant influence upon the governmental, economic and social systems of the Western civilization, of nearly all the nations of Europe, of the British Commonwealth of Nations, of the United States of America, and has had a considerable impact in all other portions of the world.

The second stream, that of materialism and force, is noted in part in the Sophists and Epicureans of ancient Greece, and is traced through Seventeenth-Century Hobbes, through French materialists, through Hegel and Feuerbach of Germany, Karl Marx and Frederick Engels, Lenin, Hitler, and Stalin. It is of import now in the ruling groups in Russia and her satellites, in Spain, Portugal, and Argentina, and in North China.

The third stream, that of indifference, springs from the earliest Eastern religions; and although in their theology they place high value on the life of man, yet the extreme mysticism and aesthetic emphasis of the beauty of a spiritual hereafter, when coupled with the poverty and want of overcrowded destitution, causes the principal current religions of Asia and the East –

*The opening remarks of President Stassen's address at the Boston Garden on April 1 drew mirth from the audience, as well as from Bernard M. Baruch, James R. Killian, Jr., '26, and Karl T. Compton on the speakers' platform.*

*M.I.T. Photo*

Fay Foto Service, Inc.

*Four head tables were required to seat honored guests, panel speakers, and their wives at the Faculty Dinner at the Hotel Statler on April 1, in honor of Winston Churchill and Harold E. Stassen.*

Hinduism, Buddhism, Confucianism and Mohammedanism – to contribute largely to this stream. This philosophy is, as you recognize, of key significance in all of Asia, including China, Burma, India, Malaya, Pakistan, and also in Africa.

I recognize that a question may arise as to relating Hitler and Stalin, Nazism and Communism, to the same philosophic stream. But I reply that the attitudes in both instances toward the nature of man and his rights are closely identified, that the bitter clashes in doctrinal statement, and the war between them, rose from their proximity to each other as major, mutually suspicious powers, rather than from any fundamental ideological difference, and that the führer principle of Hitler's system, the centralism of Stalin's system, and the whole approach of ruthless domination and cold-blooded liquidation of those with whom they differed, were of the same cloth.

And some may also question the inclusion of Hindu and Moslem, bitter in their clash with each other, in the third category. But their fanatic hostility toward each other is confirmation of the mystic and rigid beliefs and callousness toward mortal life, rather than a negation of it.

I say to you tonight, I have a deep and abiding faith that the first stream of philosophic thought, that of inherent right of liberty, is correct as to the nature of man. I believe it points the way for policy and for action in the confusion and clash which have risen so soon and so sharp in the wake of World War II. I am confident it can be the basis for winning through toward the true objectives of mankind. It presents laws as true universally for all men, as are the laws of physical science which we know are valid, even though many men do not recognize or believe them.

We should understand its own dynamic, living qualities and our constant effort should be to improve the implementation of that philosophy in economic and social and political systems, and endeavor unceasingly and skillfully, and by peaceful means, to increase the adherence to it in the other portions of the world. We should further seek to improve our system with the aid of the constructive value of the bitter criticism of its economic and social shortcomings made by those who hold the opposing materialistic philosophy. Finally we ought to enrich our doctrine by the more highly developed sense of beauty and by a measure of the tranquillity of those who hold the concept of mystical indifference.

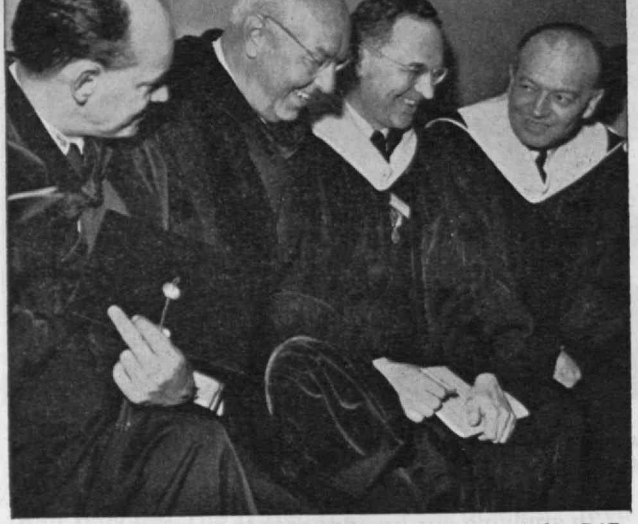
In applying our broad theory to specific, hard problems in definite terms, there may be many here tonight who, though they have traveled with me thus far, will part my company on specific suggestions. Nevertheless broad generalizations are of little value unless we give them this specific application through proposals for definite action in the problems that are before us.

If my analysis of the major stream of philosophic view motivating the Communist leadership of Russia and her satellites is correct, then it definitely indicates that their appraisal of relative force will be the key influence restraining their aggression. Holding as a fundamental idea the denial of any higher concept of justice or morality, they believe that someone will rule by force and from their standpoint it had better be them. This means in turn that no voluntary release of power over others can be anticipated, no voluntary yielding of human rights, no granting of freedoms, unless compelled by the pressure of internal or external, impending or applied force.

Relating this inescapable situation to the specific China problem, we must conclude that by our inaction, or by our withdrawal of aid, we are foolhardy to contribute to the Communist domination of China. We should move, and move promptly, to bolster the southern half of China, to assist by materials and by counsel in maintaining the independence of Canton, and of the four southern provinces of Kwantung, Kwangsi, Fukien, Hunan, and of Formosa and Hong Kong.

Giving due consideration to European needs and to our own total economic situation and capacity, we should regularly invest a portion of our resources in Asia for the resistance to Communism. The amount should be – as I see it now – a minimum of a billion dollars a year. It should be administered on an Asia-wide approach, – I'm not proposing a China program, a Japanese program or a Burma program – preferably in relation to local provinces and individual projects and in underwriting private endeavor, rather than being funneled through any central, major government.

Clearly the Marshall Plan in Europe has been the most significant single right thing we have done since the end of the war. As you know, I supported this program from the beginning. It is high time that we have a parallel MacArthur Plan in Asia. Supported in a major way, it should be long-term in its vision, continuous in its execution, carrying the same flexibility



Arthur Griffin

*Harold E. Stassen* (fourth in line) *receives congratulations for his address of the evening before, during robing of academic delegates just prior to the inaugural procession.*

of detailed application, and the same high concept of objectives and requirement of self-help as the Marshall Plan.

If we are further right in our philosophic view, then it follows that men everywhere have the right to know the facts and information and ideas from other parts of the world. An individual can pull down a curtain for his own privacy, but no ruler has the right to drop a curtan and close off men from communication with their fellow men. That was one of the great principles laid down in Mr. Churchill's speech in Fulton, Mo. The program represented by the "Voice of America," therefore, should be greatly expanded and ingeniously multiplied. Not only messages by radio, but in addition, the widespread dissemination of printed literature giving facts and information and ideas should be carried forth. I am informed by men who have the technical competence, that such literature can, with comparative ease, be scattered broadcast over closed borders by means of drifting balloons or from high flying airplanes during favorable winds. There needs to be a continuous, widespread, dramatic program of printed messages from free men to all mankind. In fact, one of my friends has suggested that the dropping of a few Sears-Roebuck catalogs should be included as part of our message. We should contest for the minds of men everywhere.

If methods such as these, of sending material over borders, seem contrary to ancient rules of diplomatic respect for borders, let me emphasize that when officials of governments constantly pour out vitriolic attacks on free peoples – and that is all they pour out to their own people – the remedy is not that of trying to block their free speech. The remedy is not infringement upon the right of assembly to hear this party line in New York or Newark, or anywhere else within free countries. Rather our doctrine indicates that the response should be widespread dissemination of information. The peoples in Russia and the satellite countries should be continuously told of our views, intentions, and firm objectives, of our desires for peace, of the facts of the rest of the world. We should apply for support from the minds of the peoples in these dictatorially governed nations. The internal pressures for freedom and peace that will come from well-informed peoples within these countries can be just as important as the deterrent of our own potential counteracting military force that is available in the event of war. These are times without parallel, and we must ingeniously develop a way in which to carry on the contest of ideas. Winning that contest will be the best assurance that there need not be a grim struggle by military force.

Some men have turned to materialism at a number of points in history when faced with widespread abuses which denied in practice the philosophy of liberty and equality which was professed. The present sway of this coercive materialistic concept is directly traceable to the autocracy of the czars, to the monopolies and unfairness to labor in early capitalism, to the neglect of the responsibility of brotherhood by our West after World War I, and above all its present extent has been due to the cruel force used by those who seized power under its doctrine. Throughout recorded history men, after listening to the exponents of this philosophy of order dictated over humanity, have repeatedly rejected it in their minds and struggled for more individual liberty. Plain people will right again the abuses which have been inflicted upon them.

Of marked interest in this whole sphere has been the recent conduct of peoples dominated by the third stream of indifference, and their rapid response to any ray of hope of better life on earth. The favorable change in Turkey and in the Philippines are recent confirmations of this.

Thus I am encouraged to say that the story of man gives renewed and deeper faith in the inherent truth of our philosophy of the native worth of man, that he was meant to be free upon this globe. It is likewise imperative that we improve the application of our own philosophy to our own social, economic, and political systems. Certainly the violations of civil rights, the discriminations and repressions of bigotry, which are too numerous in our country, are directly contrary to the philosophy to which we subscribe. There must be a steady insistence upon progress in this respect. It would be tragic if this session of Congress adjourned without at least passing the anti-lynch and anti-poll tax measures. Major progress must be made in this direction for those portions of our population which have suffered discrimination in opportunities for education, for facilities of better health, and for conditions of housing.

Our concept of the nature of man is further guidance, though in a very different manner, in our economic and social policy. It means that those policies taken as a whole should contribute to the rounded development, the creative capacity, the worth-while character, and the true happiness of man. The objectives of our economic policies, therefore, must not be limited by the materialistic principle of meeting to the maximum degree the physical wants of man. It is undoubtedly true that if Government were to take over the distribution of all the food of the nation, at least in theory, it could deliver a packaged amount of food to every household every day at less expense than now involved. It is equally true, in theory, that if Government took over the distribution of clothing

it could deliver to every person every year allocated clothing at less expense than clothing now costs. The same observation could be applied to other necessities of life. Let me make it clear that from a strictly material approach I believe that the result of such an attempt would in fact be the loss of interest in production, lower supplies, and the failure to attain the material Utopia outlined.

But entirely apart from the question of the successful production of material returns, do you not agree that removing from the individual both the privilege and the responsibility of planning for the provision of necessities, of making choices, of budgeting earnings, of weighing relativities, would result in the end in a people of less resourcefulness, less value of personality, less happiness, less strength of character? Thus I feel the economic socialists are departing from the basic philosophic stream in which we would move. Their concentration upon attempted material service to the many, with disregard for the individual rights and opportunities of the few who are especially talented in various fields, negates the basic tenets of our way of life.

The concept of the natural rights of each man must give rise to a system that protects against oppression by either a group of rulers or by a majority itself. Is it not clear that each aspect of the system should serve the many and the few? It should yield dividends in standards of living, in education, and enjoyment, to the many, but it should also keep open the avenues of opportunity for the few who stand out in each category. Such a system should be certain to safeguard minorities of whatever kind, and more particularly should be so constituted as to keep open the road for the few to develop and use their unusual talents. If under the impetus of a short-sighted response to numbers in a democracy, or in revolt against the oppression of rulers, economic, social, and political systems are directed only towards fruits for the many, the result will be a deteriorating mess of mediocrity. The great artist, the inventor, the skilled surgeon, the exceptional scientist, the ingenious engineer, the keen financier, the gifted production manager, the designer, the craftsman, the scholar, each should find his path blocked by no insurmountable artificial obstacles, no excessive man-made handicaps, and each should have before him the fullest of incentive. The unfolding genius of each of these in a desirable system will in turn yield great dividends to the many, yes, to all.

The general attitude of the economic total-socialists of "bringing it to the people," can clearly be overdone. As Toynbee reports, all of history shows that civilizations may deteriorate or abort or ossify when they meet enervating, dissipating conditions, or when they encounter adversity too extreme to surmount. There is every indication from the ancient Egyptian civilization of 6,000 years ago down to modern Western civilization, that a challenge of sufficient nature, but not obliterating in its weight, leads to the most significant development and response. Do not the studies of individual human nature indicate a similar rule? The capacities, of course, are varied, but in relationship to potentiality, a challenge of some adversity and stimulus, not stifling in amount, develops definitely stronger personality, a happier individual, than does either

*M.I.T. Phot.*

*Mrs. Compton chats informally with Mrs. Churchill as Jacques Maritain, distinguished philosopher from Princeton, watches preparations for the Stassen address in Boston.*

crushing subservience or blissful lassitude. To me this means that attempts to establish a breakfast-in-bed economy for the citizens is a sad mistake both for them and for the nation. And it is contrary to our own basic philosophy. Our unending effort should be to ease those overwhelming burdens which are beyond the capacity of individual man to bear, but we must leave the major normal provision for man's own livelihood and future up to him, himself.

In our economic relationships with those who are of the third major conceptual stream, that of indifference and mysticism, we should seek to stimulate, and contribute toward, the improvement of the very low standards of living in these areas, and at the same time to demonstrate, and lead toward, a higher appraisal of human life. Too often has the Western world been willing to profit by that low appraisal of native human life in the exploitation of colonial resources, instead of demonstrating a higher value for life. There is a small grain of truth in the idea that the investor, by developing products of the soil and in conducting commerce for those who work for him, will be able to give them a raise in wages. Here the Dutch in the East Indies and the French in Indo-China are currently particularly subject to censure. All of us need to think through our basic policy in dependent areas in the Near East, in Africa, and in Asia, and harmonize those policies with our fundamental doctrine of the nature of man. A greater portion of the returns from the resources of these territories should be retained there for direct and constructive purpose, utilizing the superb experience of Western civilization, for the advancement of the native peoples, for their schooling, their health, the raising of their standards of living. Education is the first contribution which should be made. Some persons would disagree with me and place food first in any program of assistance. But, in the long run, if there is not the educational background which will enable a people to lead constructive, useful lives, it seems to me there is little use in embarking on a program in which food should have top priority. The proposed program requires the development by Western nations, with the aid of the Trusteeship portions of the United Nations Charter,

(*Continued on page 454*)

# Social Implications of Science

UNUSUAL interest was shown in the series of panel discussions dealing with the general broad topic of "The Social Implications of Scientific Progress at the Mid-Century" which was a major feature of the M.I.T. Convocation on Friday, April 1. Thirty-one distinguished scholars from all parts of the world participated in morning and afternoon sessions to discuss the material, spiritual, and intellectual progress which has taken place during the past half century, to comment on the manner in which science and technology have influenced our lives for better or for worse during this period, and to attempt to deal with some of today's major questions in the hope that the results of thoughts presented in formal papers and in informal round-table discussions might lead man to a richer, more peaceful, more satisfying life in the second half of the Twentieth Century.

Three morning and three afternoon sessions were held concurrently, and therefore, it was not possible for any person to benefit from attendance at all discussions. Each of the three concurrently held sessions dealt with one phase of the material, the spiritual, or the intellectual aspect of the broad questions to which the panel dicussions were aimed. The largest assembly hall facilities available at M.I.T. were pressed into service for these panels: namely, the Rockwell Athletic Cage, capable of seating 4,500; Morss Hall in Walker Memorial, which accommodates about 1,000 people; and Huntington Hall with a seating capacity of 530 persons. So great was the interest in the panel discussions that Rockwell Athletic Cage was comfortably filled, Morss Hall was filled to capacity, and Huntington Hall was so well attended that the overflow audience had to be accommodated by a public-address system in an adjoining seminar room, in the lobby of Building 10, and in the Great Court.

As for the panels themselves, each was opened by a member of the M.I.T. Faculty serving as moderator, and each benefited from prepared addresses of half a dozen distinguished scholars. It is estimated that the material discussed at the six panels would provide about 70 to 75 pages of text if published in full in The Review. Unfortunately, it is not possible to include all of this material in detail in this issue. The Review is presenting reasonably comprehensive summaries, however, prepared by Charles P. Kindleberger, Associate Professor of Economics; George deSantillana, Associate Professor of the History of Philosphy and Science; John B. Rae, Associate Professor of History; Charles H. Blake, '24, Associate Professor of Zoology; C. Conrad Wright, instructor in the Department of English and History; and Thomas H. D. Mahoney, Assistant Professor of History. It is hoped that the reader will find the summaries, prepared by this able corps of Review reporters, to be adequate until the full text of the panel discussions can be made available this fall in a book of The Technology Press.

## *The Problem of World Production*

PHYSICAL science has the techniques, actual or in prospect, to raise the standard of living of increased numbers of people to make possible the efficient replacement of the world's population and the sustaining of its renewable resources. The difficulties lie in the application of these techniques under the conditions which prevail in the world of today. This was the general conclusion which emerged from the panel discussion on "The Problem of World Production," held in the Rockwell Athletic Cage in the morning on April 1, 1949, at the M.I.T. Mid-Century Convocation. Taking part in the panel, which was attended by about 4,000 people, were: Fairfield Osborn, naturalist; Vannevar Bush, '16, electrical engineer; Frank W. Notestein, demographer; Robert P. Russell, '22, chemical engineer and business executive; and Sir Henry Tizard, physicist. Professor W. Rupert Maclaurin, of the Department of Economics and Social Science at M.I.T., presided as moderator, and Charles P. Kindleberger, Associate Professor of Economics in the same Department, was the assistant moderator.

While a basis for general agreement was found in the discussion, different participants placed emphasis on different aspects of the over-all conclusion. Mr. Osborn, who is president of the recently organized Conservation Foundation, as well as of the New York Zoological Society, drew attention to the fact that even in the United States, which is furthest along in

*M.I.T. Photo*

*Making final plans for the conduct of the panel on "The Problem of World Production" at a breakfast which was held at the Ritz-Carlton Hotel in Boston are* (left to right): *Sir Henry Tizard, Robert P. Russell, '22, Vannevar Bush, '16, W. Rupert Maclaurin, moderator, Frank W. Notestein, and Fairfield Osborn.*

***Summarized here are the Convocation discussions aimed to determine how science has affected man's way of life***

the application to production of scientific discovery, animal, plant, and marine life are exploited at rates which do not provide for the sustenance of natural resources. Dr. Bush, President of the Carnegie Institution of Washington, stressed the riches flowing from science, present and prospective, and claimed that while exponential rates of growth can be sustained in no line of activity, the growth of science was likely to stay ahead of that of population. The necessity to provide for the restriction of fertility of Asiatic peasants was seen by Professor Notestein, Director of the Office of Population Research of Princeton University, who recently returned from six months in Japan, China, and the Netherlands East Indies. Mr. Russell, Director in Venezuela of the International Basic Economy Corporation, which is trying to put into practice in Latin America the latest techniques in agricultural production, cited experiences in applying modern methods of planting, cultivation, harvesting, and storage of foodstuffs to relatively underdeveloped areas, and indicated his belief that this was a fertile field for private investment. Sir Henry Tizard, chairman of the British Advisory Council on Scientific Policy, and chairman of the Committee on Industrial Productivity, underlined the conclusion that the problem was not one of discoveries but of application, so contrived that standards of living would be raised before increased output was absorbed by added numbers of people.

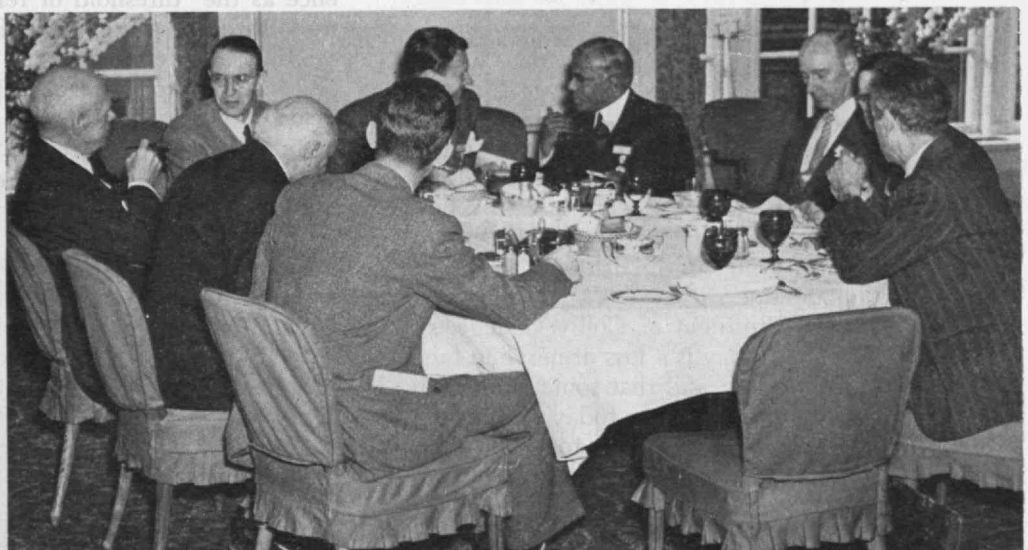
While Sir Henry expressed the view that the coal reserves of the world might be found to be limited if the world's entire population were to enjoy a standard of living equal to that in the United States, and while Dr. Bush mentioned in passing that we may yet encounter problems of depletion in certain minerals, the major conservation issue was agreed to be that of using our soil, water, and marine resources on a sustained-yield basis. Mr. Osborn saw the possibility that water resources would move into the forefront of conservation issues within 10 years, but stated that only 15 per cent of the cropland of the United States is now being farmed under appropriate conservation practice. Claiming for himself the role of reporter, rather than a Cassandra, Mr. Osborn warned nonetheless that science is unlikely to be able to find inorganic sources of food, and for this reason must rely on organic processes of nature. Speeding up of these processes was declared to be possible and imperative, but in this development major attention must be paid to the maintenance of the natural economy of the earth.

While Mr. Russell made the point that there are still more unused resources for exploitation than alarmists concede, Dr. Notestein observed that the margin of unused resources available for expanding standards of living in the Eastern Hemisphere was far below that with which the process was begun in the West. Sir Henry Tizard suggested that immediate increases in production be sought from existing resources which are not being cultivated efficiently before turning to the margin of unused resources left in the world.

Scientific progress in agriculture is proceeding at an explosive rate, according to Dr. Bush, who listed, in addition to new and improved insecticides, fungicides, and pesticides, the recent discoveries of cures for rinderpest, animal diseases communicated by the tsetse fly, and bovine mastitis. Photosynthesis, or the synthetic production of chlorophyll, was regarded by Dr. Bush as likely of early achievement. "The technical part is easy," Dr. Bush stated. "The problem is how to apply the advances made by physical scientists under the conditions existing in the real world. This is a task not for physical but for social scientists, and for political practitioners."

The practical application of agricultural technology was discussed in particular by Mr. Russell, who noted the achievement of large increases in yields of corn and upland rice in Brazil and Venezuela from small-scale undertakings. Use of fertilizer is spreading to Latin America, he asserted, as native farmers observe in practice the increased returns possible from its use. Additional factors making possible enlarged output and increased economy in use are weed and pest control, mechanical cultivation and harvesting, and improved transportation and storage facilities. Based on the experience of the International Basic Economy Corporation in undertaking specific projects designed for the widest demonstration value as well as for profit, Mr. Russell expressed the view that there is a

*M.I.T. Photo*



*At the "Underdeveloped Area" panel* (clockwise order from foreground) *are: Lester W. Preston, '51, aide, Lord Hailey, James M. Barker, '07, Norman J. Padelford, moderator, Nelson A. Rockfeller, Sir Ramaswami Mudaliar, Joseph H. Keenan, '22, assistant moderator, Richard M. Bissell, Jr., and Pierre Ryckmans.*

*All set to discuss "Science, Materialism and the Human Spirit" in Huntington Hall, formerly known as Room 10–250 in the main educational group of M.I.T. buildings, are* (left to right): *Percy W. Bridgman, Jacques Maritain, Karl W. Deutsch, assistant moderator, Everett M. Baker, moderator, Walter T. Stace, and J. Seelye Bixler.*

*Arthur Griffin*

wide area for private enterprise and investment to supply the needs of backward areas for education in the appropriate agricultural techniques and the facilities for their application.

Caution in the introduction of Western engineering into other parts of the world was urged by Professor Notestein, who cited the case of the Netherlands East Indies. The cultivation of colonial products in Java and Modura under Dutch rule produced a tripling of the population from 1860 to 1930 and a density of 800 people to the square mile. While agricultural products were exported, rice, the basic ingredient of the native diet, has to be imported, leaving the economy in delicate balance. Lack of education either for literacy or for the acquisition of skills further exposed the islands to disaster. In the light of these effects, Dr. Notestein emphasized the necessity to rely heavily on indigenous efforts in attempts to improve conditions in backward areas.

In discussing the extent to which population growth kept up with scientific advance in food production, Professor Notestein sketched the transition of Western Europe from one population with high birth rates and high death rates to a new position with low numbers, both of births and deaths. Progress in food production and medicine reduced death rates. The reduction in fertility of the population occurred as a consequence of the breakdown of the social attitudes of the original peasant society before the social pressures of urban industrial life. In Eastern Europe, the Soviet Union, Japan, and some countries of Latin America, transition to the efficient population basis is in progress. — C.P.K.

## *Science and the Human Spirit*

EVERETT M. BAKER, Dean of Students at M.I.T., who presided as moderator, opened the panel session to discuss "Science, Materialism and the Human Spirit" in Huntington Hall which was filled to overflowing, indicating that well over 530 people were in attendance on the morning of April 1. Karl W. Deutsch, Associate Professor of History at M.I.T., was the assistant moderator.

Julius S. Bixler, President of Colby College, suggested that the peril today is a loss of nerve in facing problems confronting us, and that sometimes we begin to feel that mind cannot solve today's problems.

This state of affairs has led many to indict science as the chief culprit, and, among certain theologians, to claim that there is a sharp break between our intellectual and our other activities. But if we follow that somewhat apocalyptic tendency, we shall not be able to think at all, for consistency is a prime requirement in any thought. Psychologically, Dr. Bixler reminds us, we live in one world only, not in two.

When we are afraid of science, we really mean that we are afraid that some men will misuse the knowledge which science brings forth. As a living thing, as research, science cannot be in contradiction to morality and religion.

From the life of research, there are at least three spiritual lessons to be learned: the need for intellectual integrity, the need for co-operation and communication which breaks down all provincialism, and last, the complete humility before facts. It would appear, therefore, that science leads to the threshold of religion. The idea that truth is "for use" is characteristic of the juvenile attitude.

Instead of losing faith in science, Dr. Bixler asks whether we should not, then, recover the religious implications inherent in scientific reason. Reason lifts us above the fragmentary attitudes and beliefs by which we are kept from realizing our basic unity as men. It helps us to integrate our thoughts and our lives. Whatever clues we can find to that which is valid above the competitive plane should be followed, Dr. Bixler held.

Percy W. Bridgman, distinguished physicist, Hollis Professor of Mathematics and Natural Philosophy at Harvard University, avowed that he could not see science as the "threshold of religion." Science involves no faith, not even in laws of nature, since the latter are only inferred within the bounds of known facts. Science is simply the use of intelligence in certain fields of human experience. It has no philosophy — certainly not an obsolete materialistic one. It simply requires that we use intelligence alone without recourse to the mystical. In the face of a fact there is only one possible course of action for the scientist, namely, acceptance — however much it may be at variance in the anticipations. The scientist requires fortitude, for he must go without even the faith that he shall be successful. In abiding by the discipline of acceptance of facts, the scientist is not allowed to live in a world of his own free constructions, which suits his own fancy, as the mystic chooses to do. Science does offer a consciousness of integrity, however.

Walter T. Stace, Professor of Philosophy at Princeton University, opened his remarks with the observation that it has been a common assumption of all religious points of view to believe that the world is a moral order. If, in the light of science, the world does not reveal a purpose, does this imply that no purpose is possible? Does this imply that morality is not valid, because it is "subjective" and human? But is not human nature an objective reality, just like any physical reality? Dr. Stace believes so and holds that moral principles are merely those principles of human personality and psychological laws which are entirely objective. The great founders of religion discovered certain basic laws, such as that hatred produces misery and destruction, whereas love brings happiness and life. Even as fertilizers help crops, so do certain sentiments assist the development of life.

Jacques Maritain, of Princeton University, the eminent Catholic philosopher, onetime French Ambassador to the Vatican, could not but oppose the point of view advanced by Dr. Bridgman. What Professor Bridgman had called "attempting to do with the mind things which cannot be done because of the nature of thought itself," he considers the object of a valid science of being, as created by Aristotle and Aquinas.

Nor did he think, with Professor Stace, that moral truths can be tested like fertilizer. This last approach rather shows what happens when we use reason only as an operator of sense data without considering the real problems of our consciousness. One may know all about the physiology of vision and yet not know what it is to see. Hence we should not ignore our basic intellectual intuitions, starting from which we find answers to questions of end and meaning. This is the level of the science of ontology, founded by Plato and Aristotle.

Science is morally neutral; but by giving man more than he ever expected, it has developed man's natural lust for facility, and pandered to his suggestibility. From science people expect everything. Yet creative scientists have always been led by their mediation into the philosophical realm. The speaker suggested that they get themselves some genuine philosophical equipment to help them.

Considered in their very natures, science and technology are not responsible for the moral crisis of our times, Dr. Maritain holds, nor for the destructive or besotting and dehumanizing uses to which knowledge of the physical world has been put. What is responsible for the crisis is greed and the will to power, and the temptation to which technological omnipotence gives rise, especially in collective man. The human person is threatened with all-pervading slavery, not through the fault of science but through that of the enlarged power granted to human foolishness.

But science and technology are transforming society, and this transformation itself brings new problems. As soon as we examine the collective life of men, problems, which by themselves are philosophical or spiritual, become posed in social terms. We have to organize the world to insure the liberty of the individual as well as the autonomy of groups. To the problem of the freedom of the word, we must now also add that of accession of new classes to ownership and power. We cannot shut our eyes to the grave problem of social change. If man were to lose terrestrial hope in the Gospel, our hope in a spiritual recovery of civilization would be doomed to disappointment.

In his summary of the discussion, Professor Deutsch suggested that the problem of evil in man is possibly a little more complex than suggested by Professor Stace. He also remarked that the two advocates of objective reason, Professors Stace and Bridgman, had omitted any mention of the social problem, whereas the two advocates of the "spirit," President Bixler and Professor Maritain, had given this topic serious consideration. — G. DE S.

## *Specialization in Education*

Is higher education overspecialized or is it modern society that is overspecialized? This was the basic problem submitted by the moderator, Thomas K. Sherwood, '24, Dean of Engineering at M.I.T., to the panel on "Specialization in Twentieth-Century Education." The members of the panel, in the order in which they spoke, were: Sir Richard Livingstone, President of Corpus Christi College, Oxford University; Sidney Hook, chairman of the Department of Philosophy of Washington Square College, New York University; Frederic Lilge, Assistant Professor of Education at the University of California; Charles A. Thomas, '24, Executive Vice-president of the Monsanto Chemical Company; Andrey A. Potter, '03, Dean of the Schools of Engineering at Purdue University; and Phillip J. Rulon, Professor of Education in the

*Round-table discussion at the Ritz-Carlton breakfast brought together* (left to right): *Sidney Hook, Sir Richard Livingstone, Andrey A. Potter, '03, Charles A. Thomas, '24, Thomas K. Sherwood, '24, moderator, Glenn J. Battaglia, '51, aide, Phillip J. Rulon, and Frederic Lilge, to talk about "Specialization in Twentieth Century Education."*

*Lined up for the panel discussion on "The Role of the Individual in a World of Institutions" for the afternoon session in Huntington Hall are* (in usual order, seated): *Erwin D. Canham, Carlos Contreras, and Ralph E. Flanders. Standing are: Clinton S. Golden, Douglass V. Brown, who served as moderator, and Merle A. Tuve.*

*Arthur Griffin*

Harvard Graduate School of Education. Glenn J. Battaglia, '51, and Robert J. Gillmeister, '49, assisted Dean Sherwood as aides. The meeting was held in Morss Hall at 10:00 A.M., before a capacity audience of about 1,000 people.

Dean Sherwood introduced the problem by pointing to the need for finding some method of integrating the scientist to society. The modern world, he stated, needs specialists, and the achievements of specialized education have been impressive. However, while the training of specialists has become a reasonably clear-cut process, the provision of an adequate background of general education continues to offer serious difficulties.

As a "practical prescription for the patient," Sir Richard offered five ingredients of sound education: (1) Everyone should specialize in something, so as to learn the difference between knowledge of a subject and mere interest in it; (2) The humanist must become aware of the power and importance of science and technology in modern civilization; (3) Every student should become aware of the main social and political problems of the day; (4) Our times must be viewed from the outside, by comparing our civilization with that of ancient Greece or the Middle Ages; (5) Civilization should be viewed as an effort to achieve excellence – in other words, there must be a sense of spiritual and moral issues. Repeated doses of this medicine, through adult education of a liberal type, were prescribed as the best hope of the future.

Dr. Hook suggested that our higher education suffered less from an excess of specialization than a deficiency of interrelation. He felt that professional education was certainly not overspecialized for professional competence. He deplored the demand sometimes made that higher education be organized in terms of a unified philosophy or world outlook, pointing to the medieval universities and the educational systems of Nazi Germany and Soviet Russia as examples of the restriction of free inquiry which necessarily results from such an approach. The only unity he desired in higher education was "an uncoerced convergence of interests from various disciplines on common problems."

Caution in citing German higher education as an example of the evils of overspecialization was urged by Dr. Lilge. Nineteenth-Century Germany, he pointed out, had to absorb a sudden industrialization into a society where archaic traditions and institutions were still strong and the prevailing philosophy held in contempt the material and mechanical aspects of the organization of life, the result being both political and intellectual indigestion. In the United States, where the environment and the fortunes of history have been more favorable, the problems of science and technology appear in a very different aspect. Two of these problems he regarded as deserving the particular attention of educators. The first, the habit of external preoccupation, is a survival of the constant activity and energy demanded by the material environment which those who settled in and expanded across the American continent had to conquer. In education "the pressure of getting things done, the impatience for quick and applicable results, and more efficient methods of 'know how' are inevitably conveyed to the schools and universities," leaving insufficient leisure for thinking on fundamental problems. This situation, he said, called for emphasizing the importance of the humanities in technical and professional schools as an antidote to excessive concentration on facts and results.

The second problem, the tyranny of public opinion, or the ever present pressure towards conformity, is accentuated, according to Dr. Lilge, because "technical and professional specialization, when unmitigated and unbalanced, is apt to leave the members of society with little of importance to say to one another." Our education, he felt, needs to help young people to discover the reflective and imaginative powers of their own minds and to encourage responsible thinking on matters of common concern.

Dr. Thomas called attention to the difficulty of finding accurate and generally acceptable definitions of what is meant by "general" and "specialized" educa-

*Breakfast at the Ritz-Carlton Hotel in Boston takes on a serious moment as panel speakers discuss a debated point. Left to right are: H. Guyford Stever, assistant moderator, Richard H. Koenig, '50, student aide, Peter H. Odegard, Laird Bell, Bryn J. Hovde, John D. Russell, Julius A. Stratton, '23, moderator, and Lee A. DuBridge.*

*M.I.T. Photo*

tion and suggested that what is really needed is a new orientation. Colleges and universities have not, he insisted, acknowledged that in the last 50 years American education "has gone from training for living to training to make a living." He criticized the average graduate of our "educational factories," particularly the graduate in the natural sciences, as being too much an analyst – a dissector and prober – and not enough a synthesist – a creator. The best stimulus to creative thinking comes from intimate contact between teacher and pupil, a contact, Dr. Thomas pointed out, almost impossible in today's overcrowded universities.

His conclusion was that our colleges should freely admit that a large portion of their curricula makes them vocational institutions and should pound home to their students the fact that when they leave they are not educated, that they have much more to learn and not enough time to do it. "In other words," he said, "we should ask our places of highly specialized learning to teach humility."

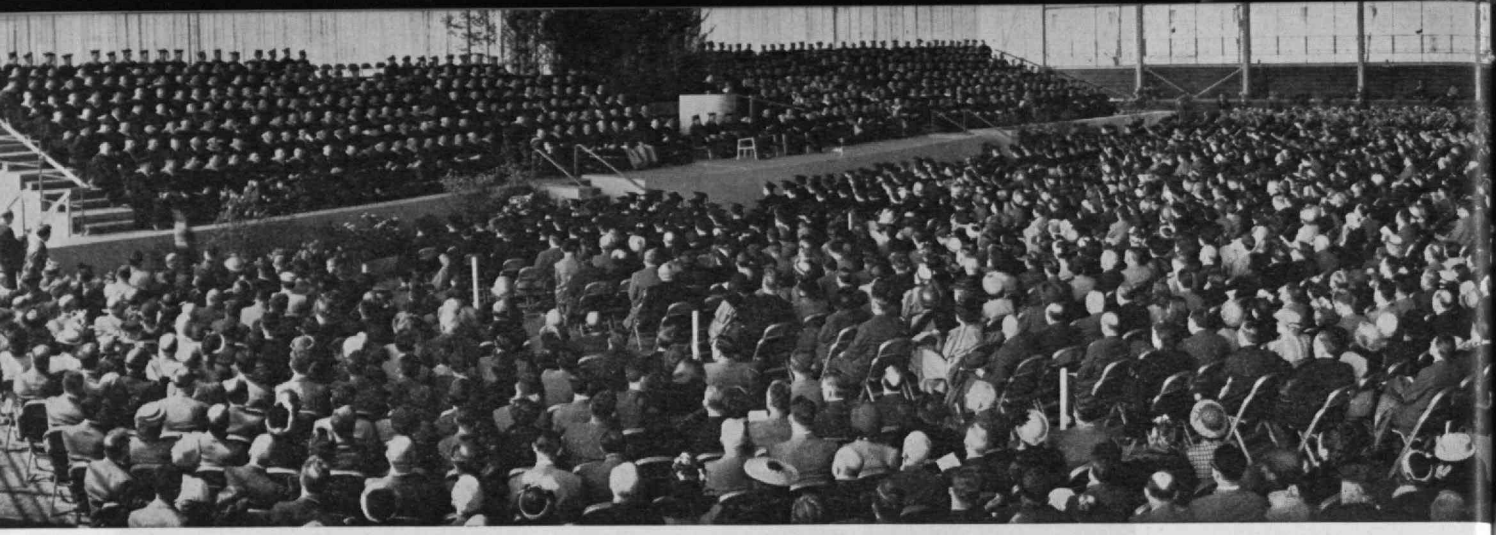
That engineering education is not overspecialized but is merely a distinctive type of general education was the claim advanced by Dr. Potter. The engineering curriculum he described as resting on a foundation of science, humanities, and social relationships. "Education in a democracy," he said, "must not grow away from the needs of the many and toward the desires of the few," and engineering education has a special appeal to career-conscious and practical youth. The engineering student of today devotes about a fifth of his time to humanities and social sciences, and Dr. Potter suggested that the end product would not be improved by requiring more general studies at the expense of the scientific and technological foundation. He also declared, as did every member of the panel, that quality of teaching is much more important than the subject matter studied. Furthermore, Dr. Potter pointed out that many of the values of general education are to be found in activities outside the classroom.

Professor Rulon bluntly denied that modern society requires excessive specialization, asserting that, on the contrary, the great achievements of our civilization, both in peace and war have been the work of specialists. He denied also that the specialist has acquired information without wisdom or conscience. He admitted that data on this point would be difficult to assemble, but suggested that it would, if gathered, prove favorable to the specialists. To interpret the facts, he proposed that the historians (themselves specialists) be asked whether earlier civilizations had declined because of overspecialization and was confident that the answer would be "no." To justify his faith in the wisdom and conscience of specialists he cited Bridgman, Bush, Conant, Eddington, Einstein, Jeans, and Oppenheimer and concluded: "We should hesitate – it seems to me – to execute the goose which may be laying these golden eggs."

In the discussion that followed, Professor Hook questioned Sir Richard Livingstone's suggestion that we look to Greek civilization for our standards, on the ground that those standards had demonstrably failed. Sir Richard replied that some things are not affected by age and the Greeks had a grasp of fundamental principles, including an interest in, and curiosity about, life and a scientific attitude. Professor Rulon raised the point that the panel had agreed that children and young people learned facts readily, and inquired if undergraduates could be concerned with greater values. Dean Potter felt that appreciation of these values was better developed in later life but felt that most college graduates had very limited scholarly interests. Sir Richard Livingstone commented that adult education could not as yet illuminate this problem, since it was often primarily concerned with adults who had very little education to begin with.

Dr. Thomas entered the discussion to warn against excessive reliance on specialization as a means of guaranteeing technical superiority in war, because, he believed, it is equally essential to meet ideas with ideas. Professor Hook declared that he did not fear Russian ideas as long as they are not accompanied by Russian troops. – J.B.R.

(*Continued on page 442*)



*On the platform with 500 academic delegates, Dr. Killian reads his presidential address of inauguration . . .*

# Killian Inducted as

CLIMAX of the three-day celebration at M.I.T. on and colorful ceremony on Saturday in which March 31 and April 1 and 2 was the impressive James R. Killian, Jr., '26, was inaugurated as the Institute's tenth president. Dr. Killian is the first alumnus to become full-time administrative head of M.I.T. and, in addition to 500 academic delegates, 4,500 persons in the Rockwell Athletic Cage and an overflow audience of 1,400 in the Great Court were on hand for the brilliant inaugural ceremony.

Shortly before 10:00 A.M., distinguished scholars from all corners of the globe gathered in the main buildings to don their caps, gowns and colorful hoods indicating scholastic rank. It was while the delegates were robing that many new acquaintances were made and old ones cemented among the 500 distinguished delegates who took part in the ceremonies. And what an assembly it was!

Among the academic delegates were representatives from 17 universities outside the United States, a number of which could proudly point to more than 500 years of service in higher education. But an institution's age was by no means the criterion by which delegates were selected; as against the 727-year-old University of Padua represented by Bruno B. Rossi, Professor of Physics at M.I.T., the delegates included Abram L. Sachar, President of Brandeis University, founded only last year. James B. Conant, President of Harvard University represented the oldest university in the United States, and the College of William and Mary, Yale University, the University of Pennsylvania, the University of Delaware, Princeton University, Columbia University, Brown University, Rutgers University, and Dartmouth College – all founded before this country's Declaration of Independence – were also represented. In the academic procession were three Nobel Prize winners: Arthur Holly Compton, Chancellor of Washington University in St. Louis, Percy Williams Bridgman, Hollis Professor of Mathematics and Natural Philosophy, at Harvard University, and Sir George Thomson, Professor of the Imperial College of Science and Technology in London. On the distaff side were Lily Ross Taylor, Dean of Bryn Mawr College, Rosemary Park, President of Connecticut College; Mildred McAfee Horton, President of Wellesley College; and Mrs. Richard L. Miner, representing the University of North Dakota. The Lowell Institute was represented by its trustee, Ralph Lowell, and the three Compton brothers (Arthur Holly, Chancellor of Washington University, Wilson Martindale, President of State College of Washington, and Karl Taylor, chairman of the M.I.T. Corporation) were also among the distinguished guests in the brilliant procession.

By 10:30 A.M. the delegates had robed and the procession from the main M.I.T. Buildings to the Rockwell Athletic Cage, a block from the Massachusetts Avenue entrance to the Rogers Building, got under way.

Chief Marshal C. George Dandrow, '22, President of the M.I.T. Alumni Association and his two aides, Edward P. Brooks, '17, and Raymond Mancha, '26, led the procession which included, in order, honored guests, academic delegates from approximately 200 educational institutions of higher learning and scientific societies, members of the M.I.T. Corporation, a delegation from Technology's Faculty, about 200 seniors representing the student body, and, finally, an honor guard of seniors conducting Dr. Compton and Dr. Killian.

The academic procession began at the President's Office as an honor guard of students called for Drs. Compton and Killian and conducted them to a reviewing station opposite the student delegation outside of Huntington Hall as shown on page 407. Chief Marshal Dandrow led the honored guests and Corporation members past this reviewing stand, to meet with and join the academic and Faculty delegates who had robed in Building 1. Both sections of the entire procession fell into line in prescribed order in the Rogers Building from which they marched across Massachusetts Avenue and along Briggs Field to the new Rockwell Athletic Cage which was dedicated last Alumni Day, June 12.

Fay Foto Service, Inc.

*. . . as 4,500 Alumni and friends of the Institute fill the Rockwell Athletic Cage for the brilliant occasion.*

# New M.I.T. President

For the occasion the Rockwell Athletic Cage had been decorated with flags and flowers, and a stage had been erected to seat the 500 delegates. In addition, seats for an audience of 4,500 persons had been placed in the Cage which was filled to capacity. Through a public-address system operating in the Great Court tardy ones who were unable to find seats in the Rockwell Cage were enabled to listen to the inauguration ceremonies in the sunshine of the bright spring morning.

A musical prelude by the M.I.T. Concert Band from 10:15 until those in the academic procession took their seats, gave visitors adequate proof that activities at the Institute are not limited to strictly scientific and engineering studies. When Drs. Compton and Killian, as the last of the academic delegates, had taken their place on the stage, the national anthem was sung after which C. George Dandrow, '22, formally opened the inauguration exercises. The invocation was given by the Reverend William Brooks Rice, minister of the Unitarian Society of Wellesley Hills, of which President Killian is a member.

In delivering the address of welcome on behalf of the M.I.T. Corporation Dr. Compton reviewed briefly Institute events of the past two decades, and expressed confidence and good wishes for the new administration whose leader he trained in a difficult task. Of his own administration, Dr. Compton remarked with characteristic modesty:

> The intervening years have been full of emergencies and problems; first the great depression; then the slow recovery; then the great World War; then the period of reconversion to peace; and now the threshold of a new era. Through these vicissitudes the institution has weathered its difficulties and has exploited its new opportunities and has come through stronger than ever before.
>
> I am convinced that this successful record is due to several factors. One of these is the complete devotion of the administration and staff to their respective duties. Another is the unswerving decision to place service to the public ahead of personal or institutional gain. Above all, there has been clearly proven the essential value of the Institute's purpose and performance.
>
> I shall be forever grateful for having had the opportunity to be associated with such fine colleagues in such challenging endeavor as has marked the years since 1930. The personal associations and the achievements have been rich rewards for all work and worry.
>
> These things I mention in part as a public tribute to the Corporation, Faculty, Alumni, and friends to whom I owe so much. Among them all, Dr. Killian has been closest in this team. Unfailing in good judgment, tireless and efficient in work, skillful in administration, completely loyal and unselfish, and above all, wholly devoted to the Institute and to its ideals of service to nation and to youth, he assumes office with a very great asset; the intimate acquaintance and the complete respect, confidence and affection of his colleagues.

At the conclusion of his address, Dr. Compton then invested Dr. Killian with the symbol of his office by conveying to him the Institute's charter of incorporation, as portrayed on the front cover of this issue of The Review.

For a brief moment, photographers' flashbulbs intermittently illuminated the scene as during a Fourth of July celebration. When all exposures were completed, President Killian responded by delivering his inaugural address which The Review is happy to present beginning on page 429.

For the Commonwealth of Massachusetts, Governor Paul A. Dever addressed the audience and spoke of the pride which the State has in its many institutions of higher learning.

Representing the oldest university in the United States, President Conant of Harvard brought greetings from the American universities. "The usual phrases," said President Conant, "are out of order. It would be superfluous to express high hopes for the new administration for success is already guaranteed. Only congratulations, heartiest congratulations, are the proper sentiments for this occasion. These I bring on behalf of Harvard University to the Massachusetts Institute of Technology on this happy day."

Sir Richard Livingstone, President of Corpus Christi College, Oxford University, spoke on behalf of the foreign universities. Said Sir Richard, "We are salut-

*M.I.T. Photo*

Everett M. Baker

*Chairman of the Inauguration Committee*

ing a foundation which has played a great part in the scientific progress and the technological achievement of America, and which is famous far beyond its own home. The mystic initials, M.I.T. need no explaining to anyone, anywhere, who is concerned with higher education." The empire of knowledge, continued Sir Richard, knows no boundaries. "Its purpose is the mastery of nature's secrets and the control of her forces for the good of humanity. It recognizes no distinctions of country or race. It is a commonwealth, taking that word in its literal meaning; for in it the good of one is the good of all. And in the spirit that rules it, we divine the shape of things to come – a world in which conflict will be replaced by co-operation."

As representative of the student body, John T. Toohy, President of the Senior Class, emphasized that the free government of their own affairs, which M.I.T. students enjoyed, aided in teaching young men to shoulder responsibilities as part of their four year training at Technology.

For the Alumni, David A. Shepard, President of the Class of 1926, gave a warm tribute to the achievements and skills which were shown by Dr. Killian in his undergraduate days. In some respects Mr. Shepard was speaking for the comparatively small group of Alumni who were classmates of Dr. Killian's in their undergraduate years. But he expressed the views of the Institute's 40,000 Alumni in his concluding remarks: "But those chosen to give that guidance [of M.I.T.] know their job – big as it is – and the alumni wish the new president the best of things for Technology and look forward to working with him to bring them about."

Finally, George R. Harrison, Dean of Science, brought the inauguration ceremonies to a close with his greetings from the Technology Faculty in which he described Dr. Killian in the following words: "We know him for a studious thinker, a delightful companion, a judicious administrator, and a kindly gentleman. We rally behind him and pledge ourselves anew to the ideals he holds aloft."

Upon the conclusion of the inaugural ceremonies, Drs. Compton and Killian led the procession from the Rockwell Cage, and returned to the Great Court where about 1,400 people had assembled. In person these administrative leaders addressed the overflow audience. The event must have reminded Dr. Compton of his own inauguration in the Great Court in the spring of 1930 when he was newly transplanted in Cambridge from Princeton and The Review's managing editor was J. Rhyne Killian, Jr. It must have brought to mind the magnificent role which the Institute and its individual staff and Faculty members played in conducting research and instruction on an unprecedented scale only a few short years ago when this country, as now, opposed any form of aggression and dictatorship. It must have reminded the new president of the great effort yet to be expended to enable the Institute to carry on the vastly expanded activities which the nation, as a whole, has come to expect of M.I.T. on the basis of past performance. And both men were able to look forward to a continuation of the friendly co-operation which had marked their collaboration for many years.

A short time later, as most of those who had taken part in the convocation and inauguration ceremonies prepared to leave Cambridge, President and Mrs. Killian held a reception and luncheon for academic delegates in Walker Memorial, and the three day event came to its formal end.

During the three-day celebration, the Institute had examined the progress which had been made during the past half century – progress, incidentally, to which M.I.T. itself had made substantial contributions. It had entertained and heard words of wisdom from distinguished scholars from all corners of the globe. In true democratic spirit, it had selected a new administrative head and had, thereby, enabled its former president to serve his country and the Institute more effectively, as chairman of the Research and Development Board of the National Military Establishment and chairman of the M.I.T. Corporation, respectively.

For nearly all of the participants, the celebration had come to an end. But for a former editor of The Technology Review the conclusion of formal ceremonies signified only the beginning of a new era – a new lifelong task of devotion to the improvement of men's minds, bodies, and spirits. For him, then, there must have been more than ordinary significance in the informal gathering in one of Boston's hotels later in the afternoon when members of the Class of 1926 gathered for a few brief moments of frolic, to reminisce and recall that they "knew him when," and to strengthen the new president in personal manifestations of the solid support which is accorded him by all Alumni of the Massachusetts Institute of Technology.

# Obligations and Ideals
## OF AN INSTITUTE OF TECHNOLOGY

***"Our preoccupation in America with the common man should not let us forget that our advancement depends upon the uncommon man. This is particularly true in education."***

*By* **JAMES R. KILLIAN, JR.**

ONE of my pleasantest recreations, which I share with my family, is mountain hiking, the climbing of the gentler mountains that are to be found in New England. Today, as I stand at the base camp of the Institute's presidency, a shining mountain but rugged, I well understand George Meredith's observation that in mountain climbing every step is a debate between what you are and what you might become. This bracing challenge of the mountain climber heightens my appreciation for the gracious welcome and the good wishes of this great assembly.

I recall also the Biblical injunction, "Let not him that girdeth on his harness boast himself as he that putteth it off." I am sure, however, that you will forgive me a special privilege today if I boast about M.I.T. I am proud to express my faith in its mission and in its future. I am proud of my colleagues on the Corporation and on the Faculty. My pride in each of these is but a measure of my respect and affection for its students, those who are here in the fullness of youth and those who once were here and now are Alumni, 40,000 strong. All these, working together, have been the weavers of many brilliant strands of high spirit, high achievement, and high ideals which make up the rich fabric of this institution.

To return to my mountain metaphor, no one remains at Technology very long without sensing altitude, the invigorating winds which blow from all quarters, the energizing sunshine of discussion and discovery, the long view.

In the administration of this institution I am also proud to be the partner of my predecessor and continuing chief, Dr. Karl T. Compton. He has brought to this institution a heightened concept of public service, a rare unity of purpose and spirit, and a prestige never before equaled. It might be said that Richard Maclaurin brought the Institute its Augustan age. If so, then Karl Compton has made his presidency its Olympian age.

And here may I inject a personal note. If I have any special qualifications for the Institute's presidency, these are largely attributable to two men — Vannevar Bush, '16, and Karl Compton. Dr. Bush, when he was vice-president and dean of engineering, first provided an inexperienced youth new occasions for new duties, and Karl Compton, always the ideal teacher, by example and by selflessness provided an unequaled opportunity for me to practice and acquire some of the methods and ideals which have made him a great educational administrator.

During the convocation of the past two days, we have been reviewing the sweep of world problems through a wide-angle lens. Today, with the sirens muted, I would like to narrow the field and focus on the obligations and the ideals of an institute of technology at this mid-century point. What can an institute of technology do in the second half of the century to advance human welfare, security, and peace? How may it best administer to the human spirit?

For this purpose, I need first of all to define an institute of technology, and this I can best do by describing the concepts which brought the Institute into being. M.I.T. opened its doors at the close of the Civil War, at a time when American business and technology were being released for a triumphant sweep across the Continent. America needed specialists who

*Fabian Bachrach*

James R. Killian, Jr., '26
*Tenth President of M.I.T.*

could apply scientific principles to industrial processes and who could provide the complex managerial skill to control machine processes. The colleges of that day were not prepared to, or else did not, train these specialists, and so a new power appeared in the educational world, the institutes of technology and then the land-grant colleges sired by the Morrill Act. M.I.T. was one of these institutions. Its scheme of education had been drawn just before the last mid-century by William Barton Rogers, professor of natural philosophy at the University of Virginia. Rogers' plan advanced four fundamental principles.

First he emphasized the importance of being useful. He had no sympathy with the then prevailing point of view that the practical professions lacked dignity. He stressed that vocational studies provide students the inner satisfaction of being able to do something useful and to do it well. He was one of the earliest advocates of what President Conant has described as the philosophy of the modern American university, "a philosophy hostile to the supremacy of a few traditional vocations, a philosophy moving toward the social equality of all useful labor."

Next Rogers stressed the educational gain to be derived from building a college program around a professional objective. He recognized that the discipline, the thoroughness, and the motivation inherent in the engineering program have great educational value.

Rogers' next principle, that of learning by doing, he expressed through the laboratory method of instruction. This idea was not original with him, but in the new institute he gave it its first extensive, systematic application. In his educational thinking, Rogers always stressed method; he had faith in the scientific method, in the spirit of science, and its search for truth. This led him to foresee the far-reaching effects on higher education of the spirit and methods of scientific research, the concept which holds that learning thrives best in an atmosphere not of imitativeness but of creativeness.

*Following the inauguration ceremonies, President and Mrs. Killian greet guests at an informal reception which was held in Walker Memorial.*

*M.I.T. Photo*

And finally Rogers was single-minded in his belief that learning principles is more important than learning facts. "We believe," he said, "that the most truly practical education, even in an industrial point of view, is one founded on a thorough knowledge of scientific laws and principles, and which unites with habits of close observation and exact reasoning a large general cultivation."

These concepts of Rogers', later enriched by Francis Amasa Walker, led to the growth of a special type of educational institution which can be defined as a university polarized around science, engineering, and the arts. We might call it a university limited in its objectives but unlimited in the breadth and thoroughness with which it pursues these objectives.

These concepts explain why an institute of technology, as I define it, includes an undergraduate school and a graduate school as coequal parts of a homogeneous faculty. Out of Rogers' plan has evolved a school of engineering and applied science working in close association with a school of pure science, each complementary and both enriched by the social and aesthetic values of architecture and the humanities. I have reviewed these evolving principles of our founder so that I might today reaffirm them. I believe in them and I propose in the years ahead that we hold fast to them.

And now what of the future? The development of an institution is like the printing of a colored print. The first printing lays down the design, as did Rogers for M.I.T. Successive printings create new values, increase the depth, fill in the colors. How may we continue to enrich the design of our institutes of technology so that they may reflect the changing values and needs of our free society?

We are faced, I suggest, with three imperatives. First, we must continue the creative contributions which engineering and science can make to modern life. Second, we must educate for professional and social responsibility. Third, we must maintain the freedom and independence of our institutions. Let me take these in order.

### *Maintaining the Endless Frontier*

In his classic report on a national program for science, Dr. Bush described science as the endless frontier. The primary obligation of our institutes of technology will continue to be the education of men and the conduct of research to keep this frontier endless.

As Dr. Compton so convincingly stated, new wealth, in the form of new processes, new products, and even new industries, is created in the laboratory. We must stress again, however, how important this function is to our prosperity. In our dynamic economy we must constantly create more jobs for more people. We must steadily increase our output per man-hour if we are to have better and cheaper consumer goods along with higher wages.

We must also recognize that science is a national resource out of which can, and must, come replacements

and substitutes for depleted natural resources. In fact, one of the major responsibilities of science and technology in the years ahead will be the conservation of natural resources and the replacement of scarce materials by equally good or better substitutes.

Basic science, applied science, and technology are vital factors in meeting all of these needs of a prosperous economy. They are likewise essential to the maintenance of health. The disease-destroying powers of penicillin were discovered in a university laboratory, and industry mobilized its engineering and technological skills to make it rapidly available to all our people. Nuclear science has already been put to work in dramatic and effective ways to detect and cure disease. Through such typical procedures, the basic scientists and their colleagues, the doctors and engineers, are giving our people a more buoyant health, greater life expectancy, better defenses against disease. In the schools where such men are trained we must be relentless in increasing their capacity to achieve these goals.

Maintenance of the endless frontier is likewise essential to national security. A healthy people, a prosperous economy, and adequate natural resources are our chief defensive lines. One of America's greatest sources of strength is its unequaled industrial capacity. Our schools of science and engineering, educating men for the refinement and management of this productive machine, have a major responsibility in helping to make sure that America can always be, if need be, the arsenal of democracy.

We must also be prepared with the men who can outwit any enemy in the design of weapons and countermeasures. In speaking of the British scientists in the Battle of Britain, Mr. Churchill observes that "unless British science had proved superior to German . . . we might well have been defeated, and, being defeated, destroyed." He might later have said the same of American science and our own war effort. We must continue to educate the imaginative and audacious minds that created the Office of Scientific Research and Development and mustered the democratic ranks of American scientists into invincible battalions, such as our own Radiation Laboratory here in Cambridge. We must be able again to beat an enemy to the draw, as we did in developing the atomic bomb.

Our schools of science and engineering, if they are strong, are a powerful fleet in being, a striking force that can be thrown into action instantly if needed. We must be sure to have in these institutions this kind of reserve strength – and we must strive unremittingly to prevent its ever having to be used for war.

The maintenance of the endless frontier also provides the promise that our research and our technology will contribute to human welfare far beyond the boundaries of our own country. Great reaches of the world are still undeveloped. A majority of the people of the world live in a state of poverty and even of chronic starvation, judged by modern nutritional standards. Science can accept Mr. Churchill's challenge to prevent starvation. The resources of science and technology, combined with imaginative free enterprise in partnership with government, can raise the world's standard of living. Our institutes of technology have a major part to play in educating the men who

Arthur Griffin

*At the informal party which the Class of 1926 held in honor of President Killian's inauguration, David A. Shepard, Class President* (extreme left), *Robert T. Dawes, Cedric Valentine, and Cecil C. Ogren take obvious pleasure in presenting a gift to Dr. Killian.*

can harness the energy and who have the vision to put it to work for the peoples of the world. This is another way by which science and technology can remove the economic barriers to world government.

I review these fundamental contributions of science to national and international welfare to emphasize that we need more and not less science and technology. All the silly talk about a science holiday is as dangerous as the talk some years ago about economic maturity. Science and technology, under enlightened direction, are essential to health, prosperity, and security. In addition they both give you and me more freedom to be socially responsible citizens, to be good neighbors, to pursue the good life, to seek ways of making it unnecessary ever again to divert science away from it normal peaceful objectives.

I would also emphasize the need in America for superlative achievement in basic science, as distinct from applied science. Before World War II a majority of the fundamental advances in science came from Europe, while we were content largely to apply and develop these fundamental concepts. America itself must develop the men who can make fundamental, creative contributions, and we must find the educational means for doing so. A special responsibility lies upon our institutes of technology not to neglect basic science. Not only do they need it as an essential partner of engineering; they need to cultivate science for its own special values, its disinterested search for truth, its creativeness, its readiness to acknowledge error and to accept new ideas. Our flourishing graduate schools are our surest means of furthering this objective. At M.I.T. one ventures the hope that we might make a further contribution by a more formal recognition and support of postdoctoral study.

This whole range of responsibilities for the public welfare which rests upon the team of engineering and science must guide us in all of our activities at M.I.T.

## *President Killian's Statement on Academic Freedom and Communism*

*Recent reports in the public press call for a statement of the Institute's attitude toward Communism and toward freedom of inquiry.*

*The Institute is unequivocally opposed to Communism; it is also sternly opposed to the Communistic method of dictating to scholars the opinions they must have and the doctrines they must teach. M.I.T. seeks first a Faculty and staff of thoroughly competent scholars and teachers of high integrity. Assuming this competence and integrity, it believes that its Faculty, as long as its members abide by the law and maintain the dignity of their profession, must be free to inquire, to challenge, and to doubt in their search for what is true and good. They must be free to examine controversial matters, to reach conclusions of their own, to criticize and be criticized. Only through such unqualified freedom of thought and investigation can an educational institution, especially one dealing with science, perform its function of seeking truth.*

*Should a member of our staff be indicted for advocating the violent overthrow of the American Government or other criminal acts, or if the evidence of such acts were incontrovertible, immediate action will be taken which would protect the Institute, and at the same time, preserve his rights. If this staff member should be convicted of this charge, he would be discharged.*

*The Institute also wishes to make it clear that it believes that the teacher, as a teacher, must be free of doctrinaire control originating outside of his own mind. He must be free to be critical and objective in his own way, and above all he must work in the clear daylight without hidden allegiances or obligations which require him to distort his research or teaching in accord with dictates from without. If a teacher were found to be subject to improper outside control in his teaching, the Institute would regard him as incompetent.*

*The Institute believes that one of the greatest dangers of the present cold war and of the present fear of Communism is the danger that they will cause America to relinquish or distort or weaken basic civil rights. This is a greater danger than the occasional impact or influence of a Communist.*

*No American college or university has a more impressive record than M.I.T. of devotion to our national welfare or of wholehearted support of the ideals of American democracy. It has been the training ground for thousands of Alumni who serve and strengthen our system of free enterprise and who vigorously uphold the principles of our free society. Its Faculty serves the community, the state, and the nation in a spirit of complete dedication to the public service. I need only cite the Institute's war record and the major contributions it made through research and training to the national cause.*

*I believe it is equally true that it would be hard to find an educational institution in which the students are so unanimously devoted to American ideals. They are too critical and independent to be easy marks for any special pleaders. The overwhelming majority of our students are so thoroughly imbued with their democratic heritage and with their responsibilities and privileges as American citizens that there is no danger of their being corrupted.*

*The Institute proposes to deal with all charges of Communism or other ideologies in the light of these considerations and convictions.*

J. R. Killian, Jr.

We also believe that this team is made stronger by a third member, social science, including management, which has taken its place as a professional field in its own right at M.I.T. The combination of the engineer, the economist, the regional planner, the architect, and the sociologist provides a task force of exceptional power for the beneficent management of social forces. This combination of professions acting through industry and government can insure that science and technology work with maximum efficiency for social ends. We propose to maintain here an institute of technology creatively active in social technology.

### *Education for Social Responsibility*

Second on my list of obligations to be met by an institute of technology is the obligation to achieve a better synthesis between professional education and general education.

In the second half of the Twentieth Century the need for the "large general cultivation" of which Rogers spoke will have a commanding urgency. No college, in a world of turmoil, can shirk the responsibility of preparing a man to be a citizen as well as to make a living. As we stand at the mid-century point, the responsibilities of the professional men, especially the scientists and the engineers, have a new and awesome measure.

The late Mr. Justice Holmes once pointed up this problem of the specialist when he argued that lawyers should be civilized. "Perhaps in America . . . we need specialists," he remarked, "even more than we do civilized men. Civilized men who are nothing else are a little apt to think that they cannot breathe the American atmosphere. But if a man is a specialist, it is most desirable that he should also be civilized; that he should have laid in the outline of the other sciences as well as the light and shade of his own; that he should be reasonable and see things in their proportion. Nay, more, that he should be passionate as well as reasonable – that he should be able not only to explain but to feel; that the ardor of intellectual pursuit should be relieved by the charms of art, should be succeeded by the joy of life become an end in itself."

To this prescription of Holmes's for the professional man, we need to add another basic ingredient – that of a broader understanding of social forces – the new social mind called for by Henry Adams. The specialist must shun the view that lopsidedness is laudable; he must be politically and morally responsible; he must test his actions by their human impact. I speak not only of the scientists and engineers but also of the lawyers, physicians, and businessmen, specialists all.

The institutes of technology thus are not unique in having to meet these needs of the specialist-in-training. In the past two decades, the universities and liberal arts colleges have all been struggling with the need to provide a common core of studies which will contribute toward a man's effectiveness as an individual and as a citizen, regardless of his occupation. The old concept of the liberal arts as an ornament, or as the hallmark of a gentlemanly class, has given way to programs in the humanities and social sciences helpful in developing a sense of values pertinent to the society in which we live.

In rounding out their programs, the liberal arts colleges have recognized the educational value of the

(*Continued on page 434*)

# To our Colleagues in American Business . . .

A program in which Revere is taking especial interest and pride is that for Revere Home Flashing. The interest is based on sales considerations; we feel that this new product will broaden the market for sheet copper. The pride stems from the fact that through this promotion we are bringing the great advantages of copper flashing to homes whose prices heretofore were not thought to provide for it. This we regard as a valuable public service. Already we have sufficient evidence of sales response and public appreciation to show that the basic idea is sound, and worth pursuing.

For many years the more expensive homes have included copper flashing more or less as a matter of course. Around chimneys, in valleys, over and around windows and doors, wherever there is an opening in the roof or wall, and where one plane meets another, sheet copper is applied as a permanent seal against melting snow, wind-driven rain.

It was partly cost and partly lack of information that was keeping non-rusting copper out of the less expensive houses. As an attack upon the cost problem, Revere conducted a long series of careful tests on various gauges of copper, to see if a somewhat lighter and hence less expensive sheet would do. These tests showed that when properly applied in lengths not greater than four feet, the lighter gauge in a special temper was perfectly satisfactory.

Encouraged by this knowledge, Revere developed a standard package, containing 10 sheets, 18 by 48 inches. Included in each package is a large booklet showing by pictures and simple text how to flash a building correctly, instructions that any builder or carpenter or sheet metal worker can follow. In addition, the package contains hardware bronze nails, so there will be no danger of corroding galvanized nails being used. Two of these packages should be enough to give lasting protection to the average small home, at a price that is within reach. Actually we have a great bargain here, when the cost is compared with the tremendous damage that a single leak can cause to plaster, wall paper, even beams and floors and furniture.

An educational sales, advertising and publicity plan was set up, and is still being pursued. Thousands of homes have been flashed according to this system, homes that otherwise would have been without the protection of non-rusting copper at the vital joints. It would be difficult for Revere to decide which provides the greater satisfaction: sales, or the knowledge that fine copper flashing has been brought to home owners, and for that matter, to builders, who never before considered it within reach.

This is an excellent example of the way in which a search for expanded markets results in increased service to the people. It is thoroughly in the American tradition, for thousands of companies, large and small, have made equal and even greater contributions to our way of life.

**REVERE COPPER AND BRASS INCORPORATED**

*Founded by Paul Revere in 1801*

☆ ☆ ☆

*Executive Offices:*

**230 Park Avenue, New York 17, N. Y.**

Fabian Bachrach

*The tenth president of M.I.T. and his family in their Wellesley Hills home. With President and Mrs. Killian are their children, Rhyne Meredith, and Carolyn Makepeace Killian.*

discipline, rigor, and motivation inherent in the engineering curriculum, and they have sought to find equivalents. In turn the engineering colleges, while prizing and preserving these advantages, have been adopting into their curriculum more of the common core studies recognized in the liberal arts colleges. In this manner the two programs have benefited from one another.

In 1944 a committee of the American Society for Engineering Education published a notable report on "Engineering Education after the War." This report advocated that engineering schools devote at least 20 per cent of their undergraduate curricula to subjects in the humanities and the social sciences, and that these subjects be presented with as much vigor and integration as the professional subjects.

We must go further than this recommendation if we are to educate engineers of breadth and judgment — professional men who have the background, understanding, and public spirit to be leaders in their professions, their neighborhoods, and the nation. To be sure of educating such men, we must have the strongest possible program in general education, but we must not expect general education alone to do the job. The teaching of our professional subjects must comprehend the broader view.

At I was returning with Mr. Churchill from his speech, he leaned over and said, "As you advance science at M.I.T., don't neglect the humanities." I told him, as I tell you today, we have not and we shall not.

Along with more general education in the engineering curriculum, we should have less and less specialization in undergraduate engineering subjects, while at the same time preserving the motivation that comes from having specific courses of study, such as chemical engineering or civil engineering. What the engineering schools are trying to do is to push into the graduate years some of the more specialized work and to include in the undergraduate subjects a less empirical but more basic content of engineering science. Undergraduate engineering programs must provide a general education with the emphasis on science and engineering, rather than a specialized training with a gesture toward general education.

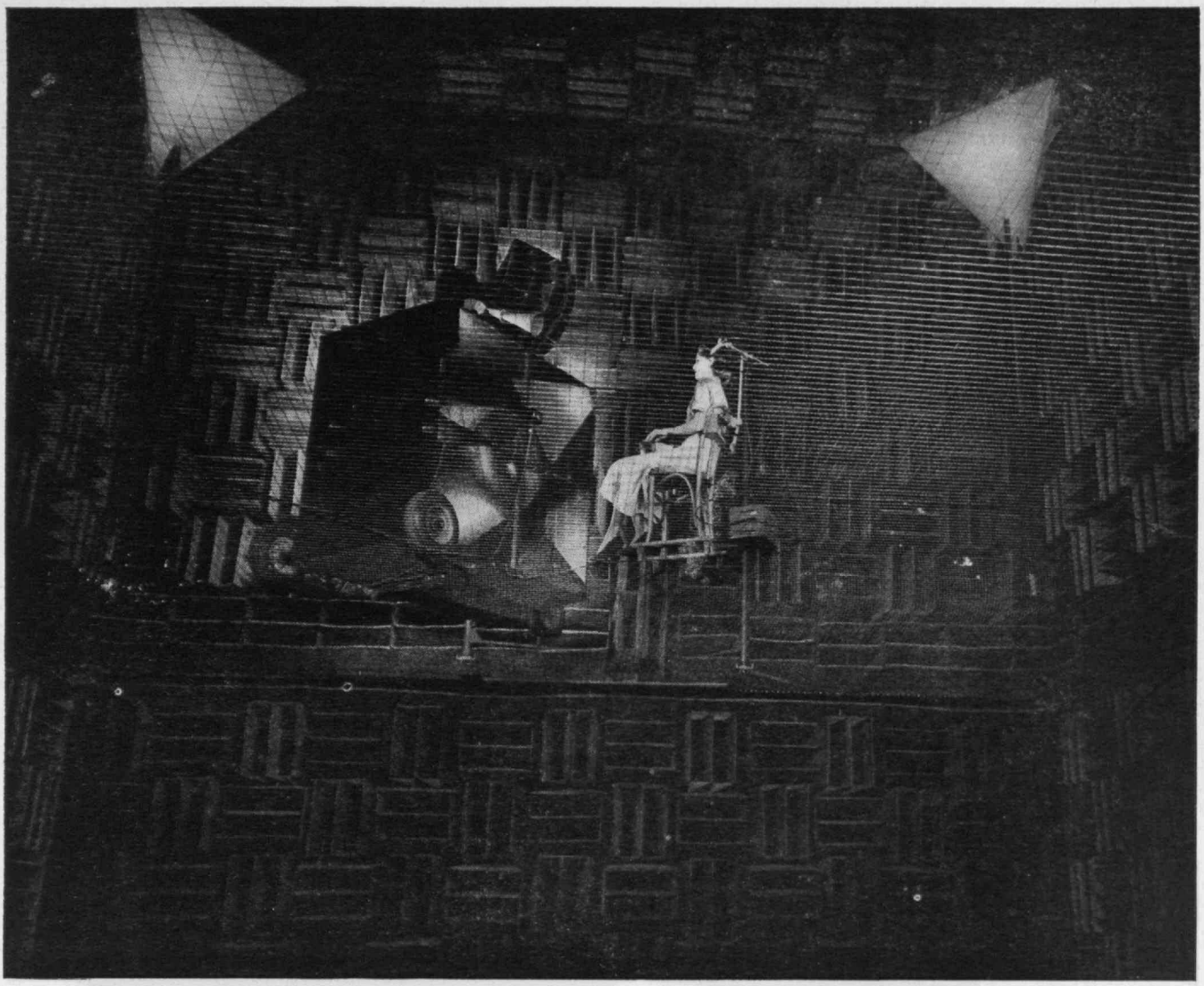
There is also an interesting trend in our graduate study of engineering to turn out graduate engineers who are more broadly trained. In the past it has been customary for our engineering schools to feel that anything beyond the usual one-year program leading to the master's degree involved research training leading to a doctorate. There is now a growing feeling that a new type of program is necessary to train those men who are not to become research specialists but who can become chief engineers or administrators, men whose graduate training has been designed broadly to develop engineering judgment and leadership. In recognition of the need for this kind of program, M.I.T. has just approved a new two-year graduate program in engineering leading to a degree intermediate between the master of science and the doctor's.

Education is to be found not only in the classroom and the laboratory but in the experience of living with one's fellows in an environment stimulating to intellectual activity and conducive to the development of community responsibility. We want to carry further the development of an environment at M.I.T. which performs in the broadest sense an educational function itself, not in a passive way but in a dynamic way. The whole complex of living facilities, activities, and atmosphere must be skillfully arranged to provide the kind of environment that contributes to the development of leadership, breadth, and standards of taste and judgment among our students — to give them the fullest possible opportunity to acquire, in a phrase of Sir Richard Livingstone's, a sense of the first-rate.

As we seek to broaden the education of the specialist, we must be careful to avoid overscheduling or overcramming him. Institutes of technology have always been proud of their reputation for requiring hard work of their students. I hope that they hold fast to that reputation. But students need not only to meet rigorous requirements; they also need opportunities to reflect, to develop the intellectual maturity that comes only from self-education under adequate stimulus. The students who are studying to be professional men need time to become resourceful, to develop judgment, to acquire a broad margin to their life. They need time to avoid what Veblen called "trained incapacity."

We must also be sure that the exceptional student has exceptional opportunities to proceed at his own pace and in his own way. Herbert Hoover has wisely observed that our preoccupation in America with the common man should not let us forget that our advancement depends upon the uncommon man. This is particularly true in education. We must find better ways of encouraging the exceptional student and the genius. We must provide a clear field for the fleet

(*Continued on page 436*)



# Your ear is our customer

**WHAT DOES SHE HEAR UP THERE IN THE AIR? . . .** *The young lady is suspended on a steel netting in a soundproofed room at Bell Telephone Laboratories. From the loudspeakers in front of her come sounds differing in frequency and intensity. She seeks to tell one from another, recording her judgment by pressing a switch. Meanwhile, as a check on what happens within her ear, electrical measurements of the same sounds are made by picking them up through a small tube just inside the ear canal. Tests like this on many people help build easier listening into your telephone system.*

---

ONE of the big jobs of Bell Laboratories is to make it possible for you to hear clearly and without strain when you use the telephone.

So Bell Laboratories scientists study what happens *inside* as well as *outside* your ear when you hear. For sound changes the minute it enters the ear, and measurements made even an inch away won't do.

By learning *what happens when you hear*, Bell Laboratories make familiar voices easy to identify by telephone. This is just one part of their continuing effort to make service better and to keep it low in cost.

**BELL TELEPHONE LABORATORIES**
*—A great research organization, working to bring you the best possible telephone service at the lowest possible cost.*

**Bell Telephone System**

## OBLIGATIONS AND IDEALS

(*Continued from page 434*)

runner, for minds "forever voyaging through strange seas of thought, alone." As Newton's statue was to Wordsworth in the ancient Cambridge, I hope that M.I.T. may stand as a "marble index" of these minds.

I have spoken of the opportunity to think in terms of world needs in an institute of technology. This opportunity arises naturally out of the internationalism of science and out of the scientific tradition of unconditional co-operation among scholars. International amity has long been the hallmark of science, and I suggest this example can be a powerful agent in promoting peace among nations.

This internationalism has been taken up with enthusiasm by students. The summer program for foreign students which M.I.T. students initiated and managed so successfully last summer and which is now spreading across the country is a fine example. You often hear that American students take no interest in shaping and influencing great affairs. The current student experiments in promoting international good will stand as a shining refutation.

Here at M.I.T. we have students from 53 foreign countries. Ambitious youth from the world over are turning to American institutions to learn useful professions in an atmosphere benign to learning and to the spirit of world citizenship. We have in this spirit of our educational institutions an exportable commodity that can contribute importantly to world prosperity and to world amity. As we minister to these students from all parts of the globe, we have a responsibility to offer them an education that is free of petty parochialism and that leads both to professional competence and to moral responsibility.

### *Preserving the Freedom of Private Institutions*

Third, our privately endowed institutes of technology, along with all endowed universities, have an obligation to be free, both in financial support and in teaching.

The American people are faced with critical decisions regarding the support of their colleges and universities. The endowed institutions are being squeezed by the effects of inflation on the one hand and the decline in investment income on the other. More disastrous than either of these could be a decline in donations. The symptoms of the malady are crystal clear. The tuitions of private colleges are being forced up and up. In an effort to increase investment income, the investment committees of a few are resorting to expedients which may endanger the tax-exemption concept.

The state institutions also have an acute problem. They must provide for a steadily increasing college population. The President's Commission on Higher Education advocates an enlargement of post-high-school study from its present enrollment of 2,400,000 to 4,600,000 by 1960. Whether or not we have so large an increase in the next decade, we must plan on pro-

(*Continued on page 438*)

(*Continued from page 436*)

viding increased opportunities for post-high-school studies; and publicly supported institutions, as the President's Commission concluded, must take most of the increase. Can they do this without Federal aid? The President's Commission did not think so. It advocated direct Federal subsidy to publicly supported institutions. On the assumption that the Federal Government could not subsidize private institutions without exercising control, the Commission would have all the direct Federal subsidy go to the public institutions. In the light of this conclusion, one is prompted to ask: Why also does not Federal subsidy of state institutions carry the threat of Federal control of these institutions?

In this situation lie the critical issues which must be met in the years ahead, and the wisdom with which we meet them may well determine the future effectiveness of our universities. May we in the colleges govern our approach to these issues by the best interests of our society and not by selfishly institutional considerations.

### *Strength in Diversity*

I do believe that our private institutions have an obligation to keep themselves strong and independent, not for selfish reasons but for reasons of high educational policy. It has been said many times, but should be said again, that our public institutions benefit from the freedom, flexibility, and independence of the private institutions. The strength of our university system lies in its diversity and its lack of centralization. The destruction of the private institutions would help to destroy this diversity.

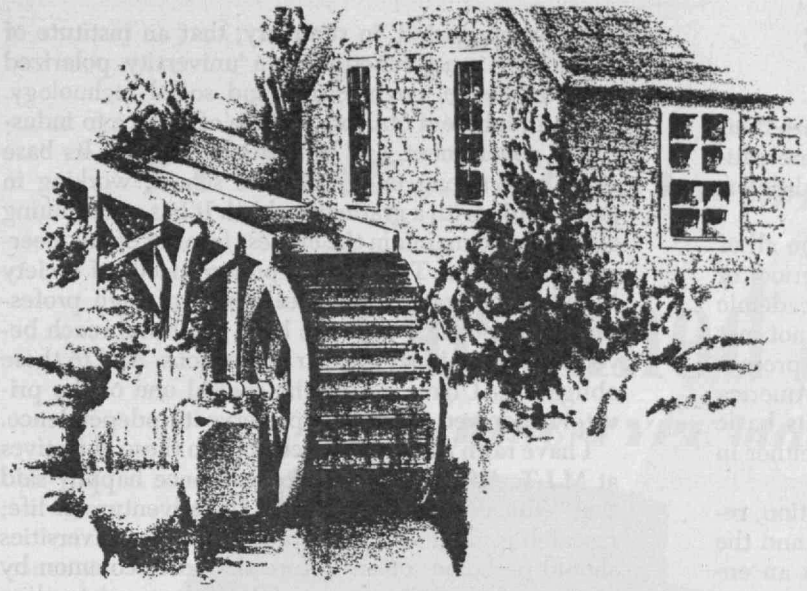
Our institutes of technology, because of their close relationship both to government and to industry, have a special obligation to maintain their independence. As a believer in free enterprise, I believe that free enterprise must help to maintain independent institutions. An institute of technology, serving and strengthening a prosperous economy, deserves enough support from free enterprise to insure its own independence — an independence that rests upon support so diversified that no encroachment upon the institution's autonomy is possible.

If they are to remain strong, the privately endowed institutions must of necessity avoid trying to cover the waterfront in their programs. They must concentrate their resources so that what they do is done well. This calls for more co-operation among institutions, and a willingness to allocate more and duplicate less in the fields they cover. Already some of our alert liberal arts colleges are beginning to exchange staff and to pool teaching resources.

### *Quality for Private Institutions*

The future of the private institution also demands restraint in numbers of students admitted. They should not try to compete with the publicly supported institutions in enrollments. They must have the cour-

(*Concluded on page 440*)

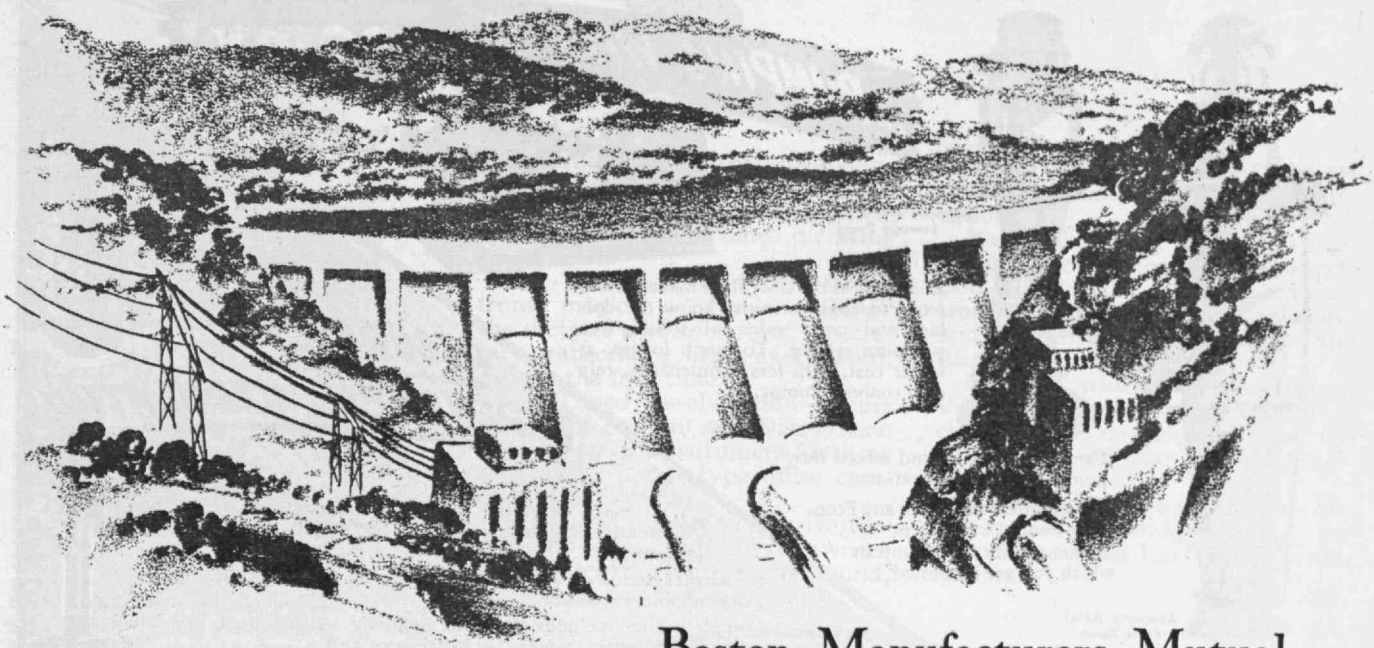


# Through the Years *Details* not *Fundamentals* change

The years have seen great changes in the techniques of hydrodynamics, but the most modern of power dams still works on the same basic principle as the mill wheel of many years ago.

During the past century's transition period of industrial development to its technological level of today, Boston Manufacturers Mutual Fire Insurance Company and Mutual Boiler Insurance Company of Boston have operated on the same fundamental principles in which they were conceived, and which have been proven under the impartial and inexorable test of time.

Their basic operating principle of fire and accident *prevention* by research and plant *inspection* is as sound and as effective in this modern era of scientific progress as it was in the nineteenth century when both companies were originally founded by manufacturers who had banded together for mutual protection against their common enemy—accidental loss.



MARSHALL B. DALTON '15
*President*

GILBERT M. RODDY '31
*Treasurer*

**Boston Manufacturers Mutual Fire Insurance Company**

* * *

**Mutual Boiler Insurance Company of Boston**

## OBLIGATIONS AND IDEALS

(*Concluded from page 438*)

age to place quality above quantity, to recognize their special function as pace-setters. Even so, private educational institutions will need imagination and determination to compete.

Another obligation to be independent lies on all of our institutions of higher learning. In a period of armed truce, the fundamental principle of academic freedom is subject to stresses which we have not met before. One of the gravest dangers of the present cold war is the danger that it will force America to relinquish or distort or weaken some of its basic civil rights. I hope that this does not happen either in our country or in our colleges.

The university, more than any other institution, resolves the dichotomy between the individual and the institutionalized aspects of modern life. It is an environment where the dignity of man is more important than the pomp of organization. It is the sanctuary of the free mind, and the mind which is not free profanes it. We must hope that the cold war may not diminish the opportunity to be free, either on the part of the educational institution or on the part of the scholar himself. To curtail freedom in our institutes of technology would be to run counter to the spirit of science, which thrives best in an atmosphere of freedom practiced with responsibility — the responsibility of a company of scholars governing themselves.

I have suggested, in summary, that an institute of technology must function as a university polarized around science, engineering, and social technology. It has an inherent obligation to be of service to industry, to government, and to society generally. Its base must be a strong undergraduate school, working in partnership with a graduate school. It has a continuing obligation to maintain the endless frontier of engineering and science. To meet the present needs of society it has an obligation to educate men of high professional competence who also have a cultural reach beyond the techniques of their professions. And to these obligations I have added the special one of the privately endowed institute to preserve its independence.

I have faith that we can accomplish these objectives at M.I.T. Alfred North Whitehead once happily said that "education is discipline for the adventure of life; research is intellectual adventure; and the universities should be homes of adventure shared in common by young and old." This is our goal. With an outstanding faculty of creative scholars and with a superbly able student body, there are no limits to the adventures we may share.

It is my hope that in the years ahead we may also achieve the imaginative administration and the noble environment to give our faculty and students opportunities to contribute their full potential to the prosperity and peace of the world. In the faith that we can attain these ideals, we move confidently into the second half of the century.

*Now* . . . **Edison has applied**

# Ear-Tuned Jewel-Action

**to DISC-TYPE office dictating instruments**


## THE DISC EDISON VOICEWRITER

combines the convenience of discs (for filing and mailing) with the *clarity* of Edison Ear-Tuned Jewel-Action.

Ear-Tuned Jewel-Action—exclusively Edison . . . the feature that makes the Edison Voicewriter different from all other "office dictating instruments"

Ear-Tuned Jewel-Action—electronic magic . . . "tailor-making" the dictator's voice so that a secretary transcribing hears every word, *clearly*, the first time.

Ear-Tuned Jewel-Action—yours now in the brilliant new Disc Edison Voicewriter, the instrument for those who prefer a disc-type office communication system.

It's one of nineteen exclusive features in the Disc Edison Voicewriter . . . features which Edison has found, through years of research, to be essential for convenient, efficient dictation.

You'll like the new Edison Voicewriter "push-button" ease of operation, for example . . . its speed control, complete instrument enclosure, and fully automatic mounting of the discs.

But . . . whichever type Edison Voicewriter best meets your needs—cylinder-type or disc—you get the advantages of Ear-Tuned Jewel-Action.

*No other instrument matches Edison understandability* . . . for only Edison has Ear-Tuned Jewel-Action.

Phone "EDIPHONE" in your city, or write Thomas A. Edison, Incorporated, West Orange, New Jersey. In Canada: Thomas A. Edison of Canada, Ltd., Toronto 1, Ontario

Thomas A Edison

Only the EDIPHONE MAN brings you the exclusive advantages of Ear-Tuned Jewel-Action.

## SOCIAL IMPLICATIONS

(*Continued from page 425*)

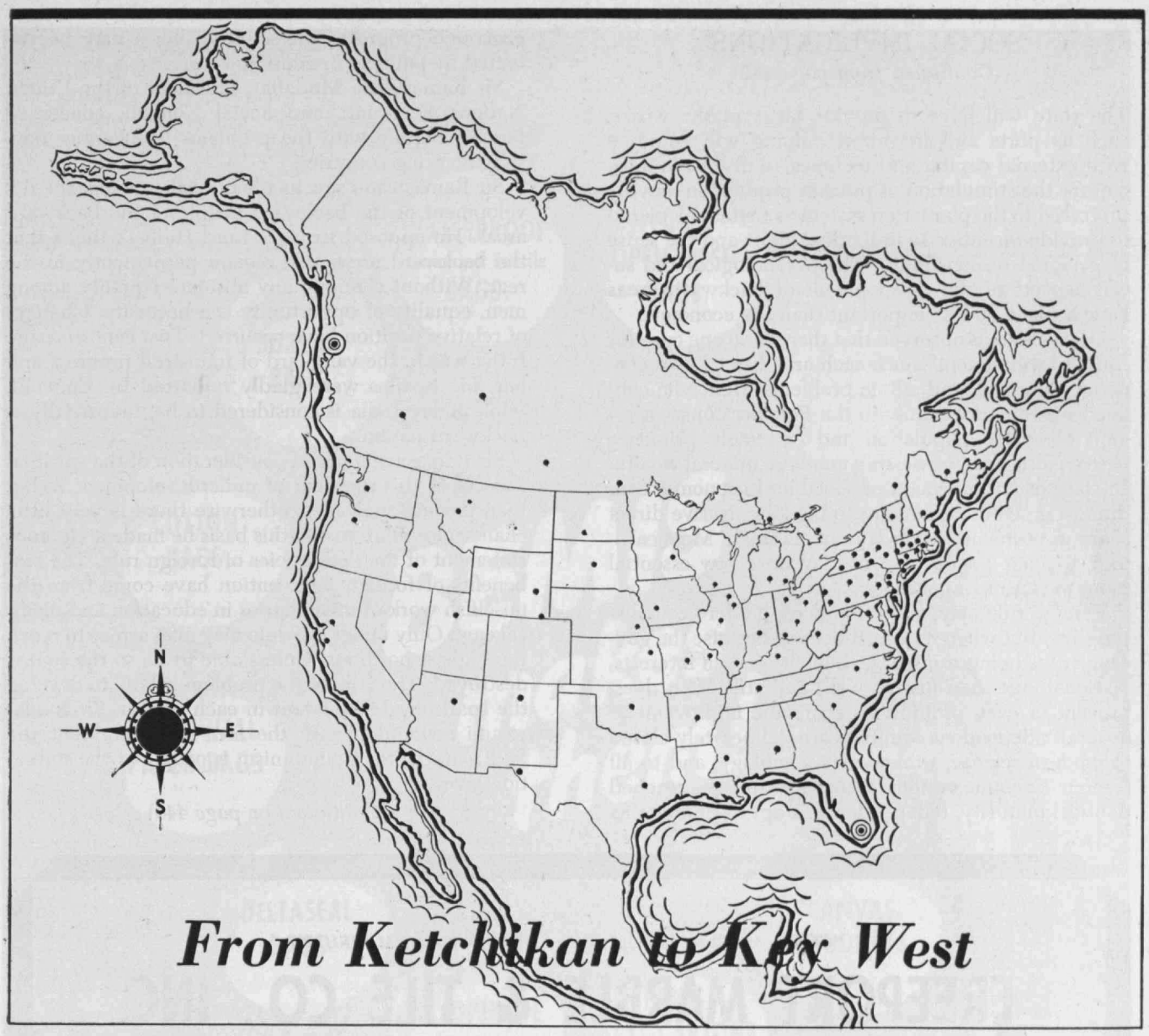
### *The Underdeveloped Area*

NORMAN J. PADELFORD, Professor of International Relations at M.I.T., acted as moderator for the panel whose topic of discussion was "The Problem of the Underdeveloped Area." About 4,000 persons assembled in the Rockwell Athletic Cage on Friday afternoon, April 1, to listen to prepared addresses and informal discussions by: Richard M. Bissell, Jr., Assistant Deputy Administrator, United States Economic Cooperation Administration; William Malcolm, Lord Hailey, lately chairman, British Colonial Research Committee; Sir Ramaswami Mudaliar, Prime Minister, Mysore, India; Nelson A. Rockefeller, President, International Basic Economy Corporation; Pierre Ryckmans, member, Trusteeship Council, United Nations General Assembly; and James M. Barker, '07, Chairman of the Board, Allstate Insurance Company. Lester W. Preston, Jr., assisted as an aide on this panel. Oswaldo Aranha, lately President of the United Nations, originally scheduled as a member of this panel, was unable to attend.

The presentation of views was started by the Baron of Shahpur in the Punjab and Newport Pagnell, William Malcolm, Lord Hailey. He pointed out that a closer approach by the large underdeveloped populations to the standards of Western social and economic life is essential to the well-being of the world at large. But we need not now fix the exact measure of that approach. The standards of life of any people depend on the natural resources of the country and on the capacity of its people to make the best use of them. Science and education may improve these factors. But there must inevitably be a great distance between the peoples who are in the vanguard and those in the rear, and this position may well endure so long that it can for practical purposes be regarded as permanent. The problems and possibilities of development can best be studied in a field in which some of the obstacles, due to political or ideological causes, are less likely to occur, namely, the areas now under control of the various colonial powers.

Three conclusions were drawn from a comprehensive plan of development of colonial areas through research. The first is the undesirability of embarking on any large-scale economic planning without possessing the scientific and technological knowledge essential for this purpose. Great deficiencies in present knowledge are already evident. The second is the need for recognizing the importance of the human factor in any scheme of development. Backwardness has physical, as well as intellectual, causes; medical, agricultural, and educational services are all needed. The third is the necessity of arriving in advance at a decision as to which of the variety of possible methods should be pursued in the development of economic resources.

(*Continued on page 444*)




# *From Ketchikan to Key West*

This map shows in part, the broad distribution of Factory Mutual's policyholders in North America. They span a continent east to west, north to south . . . from Ketchikan to Key West . . . over 20,000 risks with an average insurable value of over $1,500,000.

Our service and protection to policyholders has been expanding steadily since 1835. Starting then with a small mill in Rhode Island, now more than one half of the fifty largest corporations in America are Factory Mutual members, and there is more than 30 billions of insurance in force.

When you renew your fire insurance policies, consider the stability and broad experience of the company you select to carry the risk. Consider too, that when you choose Manufacturers Mutual, the oldest and largest of the Factory Mutual companies, your company joins with a select group of the nation's leading industrial and business firms.

There are many other good reasons why you should choose Manufacturers Mutual. One of our Engineers will be glad to call and explain them to you.

Harvey J. Freeman '16
PRESIDENT

*N. B. "Tech" men predominate in the more important positions of the individual companies that make up the Factory Mutual Group and of the jointly operated Factory Mutual Engineering Division.*

**MANUFACTURERS MUTUAL FIRE INSURANCE COMPANY**

1500 TURKS HEAD BUILDING, PROVIDENCE 1, R. I.

*Over $30,600,000,000 Insurance in Force in the Factory Mutual Companies*

## SOCIAL IMPLICATIONS

(*Continued from page 442*)

The state will have to provide large public works, such as ports and irrigation; mining will continue with external capital and technical skill; but in agriculture the stimulation of peasant production may be preferred to the plantation system as better calculated to provide incentive to individual effort and the sense of personal responsibility. The psychological and social aspects of the development of backward areas have a place no less important than the economic.

Dr. Ryckmans observed that there is no one cure for "underdevelopment" since each area has its own economic, physical, and ethnic problems. Hence he confined his remarks mainly to the Belgian Congo, a region of sparse population and extremely primitive native culture but possessing immense mineral wealth. In spite of improvement of social and economic conditions, much more remains to be done. Native direct share in economic rewards remains small. Most earnings are being spent day by day on a few essential items of consumer goods.

Foreign rule may, and often does, hinder economic progress. But when it does, it does so because the government is being run for the benefit of alien interests. National rule may just as well, and still often does, prevent or even prohibit all economic improvement. Several independent countries are deliberately closed to modern science, to modern technology, and to all foreign economic notions. When a people has reached political maturity, independence is apt to promote its economic progress, but sound policies may be defeated by political insecurity.

Sir Ramaswami Mudaliar, President of the United Nations Economic and Social Council, concerned himself mainly with the problems confronting nonselfgoverning countries.

Sir Ramaswami saw as the crucial problem the development of the backward people of the backward areas. He opposed strongly Lord Hailey's thesis that the backward areas will remain permanently in the rear. Without claiming any absolute equality among men, equality of opportunity is a necessity. Changes of relative position have occurred. Two centuries ago India was in the vanguard of industrial progress and her fine textiles were gladly imported by England, while today India is considered to be, industrially, a backward nation.

Sir Ramaswami urged consideration of the spiritual aspects of this problem of underdevelopment rather than the material ones, otherwise there is very little chance of a solution. On this basis he made a vigorous statement of the deficiencies of foreign rule. The real benefits of foreign intervention have come from the unselfish work of missionaries in education and medical care. Only under self-rule may man aspire to reach the highest positions. Unless able to do so the soul is destroyed. The crux of the problem is how to develop the spark of ability latent in each person. Sir Ramaswami concluded with the firm statement that the best material for Communism is people at the starvation level.

(*Continued on page 446*)


If we made just one kind of bag, naturally we would try to sell you that one kind. But we make good bags of *all kinds*, so our best interest lies in helping you get the kind of bag that serves you best. And if you want guidance in deciding which is best for your needs, our experience will help you there, too.

***The following M. I. T. men are with the Bemis Bro. Bag Co.***

| | | | | | |
|---|---|---|---|---|---|
| D. Belcher | (1909) | T. W. Little | (1916) | A. S. Littlefield | (1920) |
| P. E. Morrill | (1914) | C. W. Loomis | (1916) | E. M. Proctor | (1924) |
| A. H. Clarke | (1915) | J. M. Phillips | (1916) | B. R. Stetson | (1927) |
| H. P. Claussen | (1916) | J. W. Campbell | (1917) | M. A. Sayles | (1934) |
| J. R. Hunneman | (1916) | H. V. Howes | (1920) | J. R. Casserly | (1943) |

**Bemis**

**"America's No. 1 Bag Maker"**

Baltimore • Boise • Boston • Brooklyn • Buffalo • Charlotte
Chicago • Cleveland • Denver • Detroit • East Pepperell
Houston • Indianapolis • Jacksonville, Fla. • Kansas City
Los Angeles • Louisville • Memphis • Norfolk • Omaha
Minneapolis • Mobile • New Orleans • New York City
Oklahoma City • Peoria • Phoenix • Pittsburgh • Salina
St. Louis • Salt Lake City • Seattle • Vancouver, Wash.
San Francisco • Wichita • Wilmington, Calif.

## SOCIAL IMPLICATIONS

(*Continued from page 444*)

Nelson A. Rockefeller examined the growth of United States policy in the Western Hemisphere. He pointed out that we have come to realize that our interests are inseparable from those of the peoples of the rest of the world, both from a spiritual and a material point of view. We are now prepared to see the problem of underdeveloped areas not as one of men *against* men, but rather men *with* men seeking the way to a common destiny. Not alone governments, but individuals, must assume a responsibility toward these world problems.

Specifically, Mr. Rockefeller's groups have studied local bottlenecks and the means of breaking them, and have demonstrated the value of their approach by pilot operations in Brazil and Venezuela. In Brazil they have concentrated on the modernization of agriculture to improve her exchange position and compensate for the shift of labor from agriculture to industry. Local companies are set up, not as producers, but as servicers of existing producers.

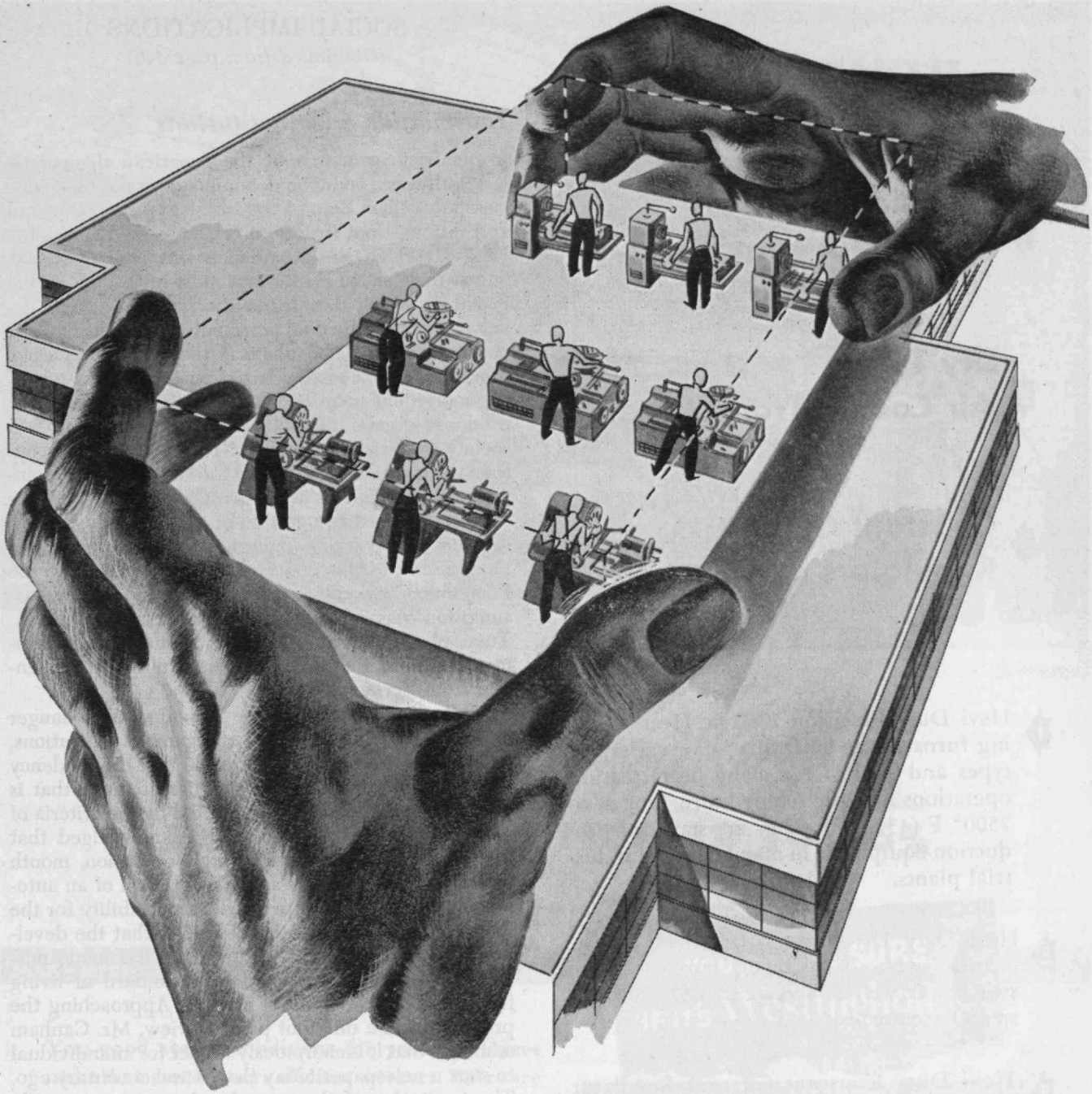
Richard M. Bissell, Jr., Assistant Deputy Administrator of E.C.A., on leave from M.I.T., held that the ultimate goal of the improvement of underdeveloped areas is the development of their populations. This is the more necessary since the economic progress of the industrial world will be slowed, or even halted, unless the flow of raw materials and food, much of it from underdeveloped areas, keeps pace.

Unlike the period from 1921 to the middle 1930's, there is now a relative overproduction by industry. This position is likely to be maintained for the next two decades and poses a special problem for Western Europe which must find trading partners who will take its industrial exports and supply food and raw materials. In the long run it is also more than possible that the United States will become a chronic importer of foodstuffs and fuels. This will involve triangular trade including Western Europe.

Forced industrialization, especially in the direction of heavy industry, is no panacea for economic ills. The need is rather for a greater capital investment in agriculture which can yield increased per capita productivity. The greatest danger lies in prestige development of industry where the price is high-cost industry, which requires long tariff protection for survival, in new areas and high-cost agriculture in old areas. In spite of this, it is difficult to secure capital for agriculture and small industrial enterprises.

To summarize and conclude the discussion, the moderator now introduced James M. Barker, '07, a life member of the M.I.T. Corporation. Mr. Barker presented a very concise and clear list of the points which have already been set out above. He concluded that the development of underdeveloped areas is a slow process and even acceleration can yield only a rather slow evolution. In closing, the moderator thanked the panel members and expressed regret that time had not permitted hearing from the assistant moderator, Professor Joseph H. Keenan, '22, of the Department of Mechanical Engineering at the Institute. — C.H.B.

(*Continued on page 448*)



## Without expanding your toolroom an inch, you can double your tooling capacity

Do you need to increase your tooling capacity? Taft-Peirce can provide *as much or as little toolmaking assistance as you may need.* We can handle a complete tooling program for you — as we do repeatedly for many a manufacturer; or we will design or build (or both) single tools, gages, punches, dies, molds, jigs or fixtures. Whether the job is large or small, every tool will be made to T-P top-precision standards.

Best of all from your point of view, the program can be finished *without adding a single machine tool to your inventory or a single toolmaker to your payroll.*

Would you like to know more about Taft-Peirce facilities? Write for the illustrated booklet, "Take It To Taft-Peirce." Address: The Taft-Peirce Mfg. Co., Woonsocket, R. I.

***For Designing, Tooling, Contract Manufacturing***

**TAKE IT TO TAFT-PEIRCE**

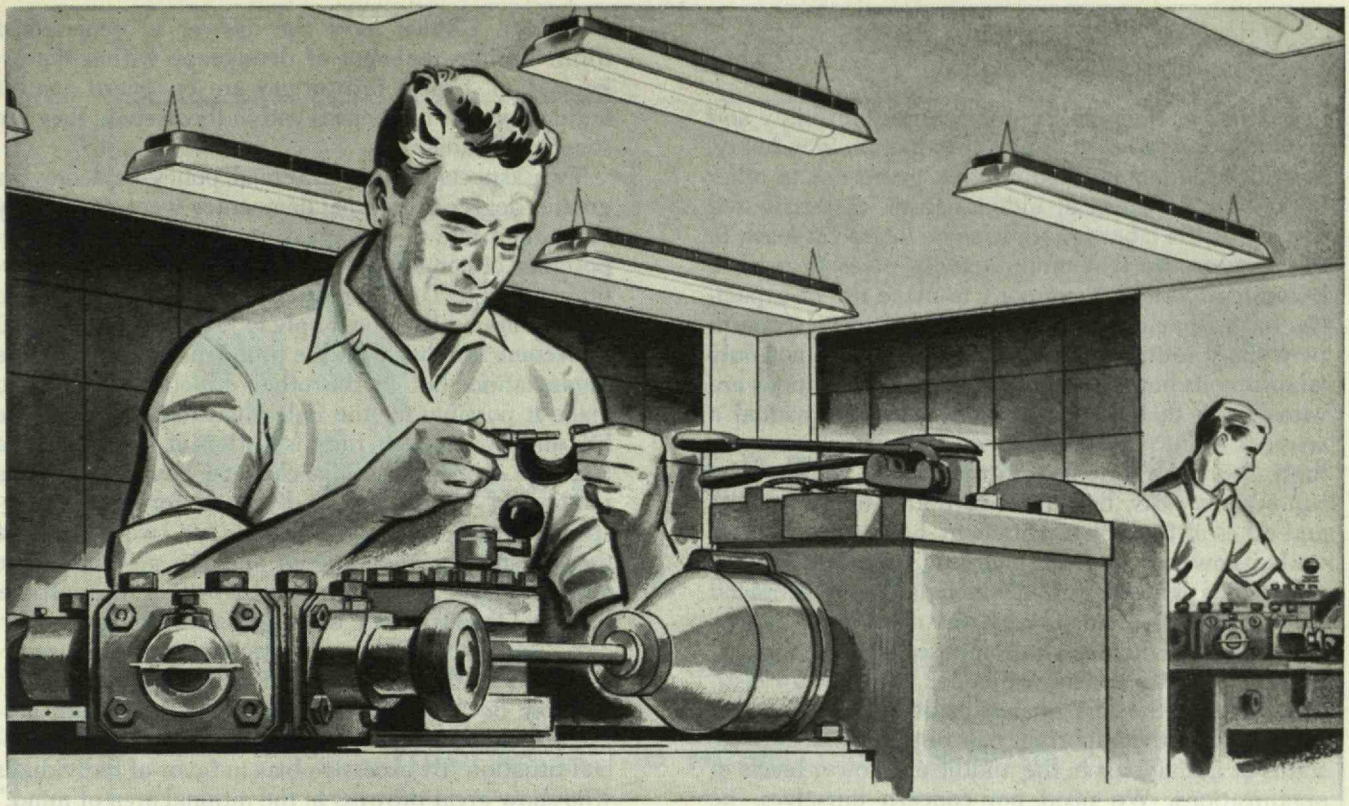
(*Continued from page 446*)

## *Individuals and Institutions*

One basic principle of the American democratic faith was a common denominator in the panel discussion of "The Role of the Individual in a World of Institutions" on Friday afternoon, in Huntington Hall, at which the attendance was well over 500. It was that "social institutions must be judged by the extent to which they foster the rich and varied development of individual personality." We must prove, declared Erwin D. Canham of the *Christian Science Monitor,* "that a society based on the significance of the individual manifests higher spiritual values and produces greater tangible achievement than does a society centered on the state." Free men must strengthen the position of man, said Carlos Contreras, architect and city planner of Mexico City, so that "we may have the highest recognition of the dignity of the individual." Real individualism is the basis of democracy, asserted Clinton S. Golden, labor adviser to the Economic Cooperation Administration. The same assumption was implicit in the remarks of Merle A. Tuve, physicist of the Carnegie Institution of Washington, and of Ralph E. Flanders, United States Senator from Vermont.

While recognizing that the individual is in danger of being stifled by the weight of organized institutions, members of the panel also stressed that the tendency towards organization holds promise of much that is good for mankind, even when tested by the criteria of individualism. Senator Flanders acknowledged that the worker who performs a single operation, month after month, on the rear-axle bevel pinion of an automobile loses a sense of personal responsibility for the final product. But he insisted equally that the development of mass-production methods has made possible the general increase in the standard of living from which the individual benefits. Approaching the problem from a different point of view, Mr. Canham admitted that it is enormously harder for an individual to start a newspaper today than it was a century ago. The institution of the press has become very costly and complex, and an initial investment of millions of dollars is necessary to start a metropolitan newspaper. To this extent, the individual has lost the opportunity to give expression to his peculiar point of view. But a compensating factor has been the growth of objectivity in news reporting. Despite the faults of the press, it serves the public better now than it did in the days when reliance was placed on diversity instead of objectivity, when it was assumed that truth might be derived "from the piling up of conflicting lies." And this changed relationship between the institution of the press and the individual, Mr. Canham declared, has been matched by similar changes with respect to other institutions. The curse of bigness has been tempered by the growth of responsibility. The institutions of today, then, are serving the individual well. "They are far from perfect. They are subject to great and steady improvement. But on the qualitative test, they pass."

(*Continued on page 450*)



# *Planned Lighting*

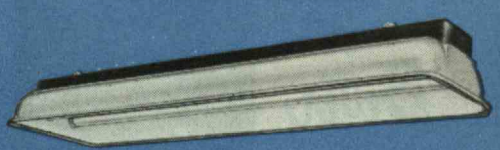
## BOOSTS PRODUCTION 12 TO 25%

YOU CAN BE SURE
IF IT'S Westinghouse

Yes, good seeing conditions for your employees make them better, more efficient workers. There are fewer accidents . . . less absenteeism. Production goes up. Costs come down. That's the result of Westinghouse Planned Lighting.

A hardware manufacturer offers proof. He reports more efficient machine operations . . . more accurate inspection . . . *and a 25% increase in over-all production.* All directly traceable to Planned Lighting.

If you're interested in cutting costs and boosting your work output, call your near-by Westinghouse Distributor. *A Westinghouse Sales Engineer will gladly co-operate with you, your local utility and electrical contractor in the development of a plan.* J-04192



**HP-SERIES**

Built for long life, these sturdy fixtures are easy to install, simple to maintain. Porcelain enamel reflectors give high reflection factor. Individual units completely wired, ready for installation. Closed and open-end fixtures for individual or continuous row mounting.

COMMERCIAL • INDUSTRIAL • FLOOD • STREET • AVIATION

**Westinghouse Planned Lighting *Pays***

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

## SOCIAL IMPLICATIONS

(*Continued from page 448*)

The loss of the sense of personal responsibility and significance as a result of mass production in industry, Senator Flanders pointed out, has given rise to other outlets for the spirit of individualism. He attributed the rise of the labor union, in some degree at least, to the opportunity that union activity gives to men to become important once more, to make use of capacities for leadership and service which find no scope in their daily routine. Mr. Golden agreed that not only labor unions but all sorts of voluntary associations are valuable in that they contribute to the individual a sense of dignity. But he warned that when men willingly become a part of institutions as a refuge, they run serious risks, because institutions take on a life and ethos of their own. Hitlerism, he pointed out, revealed how men could be induced to accept the immoral ends of an institution which had been embraced for what it seemed to offer by way of meaning for the life of the individuals who composed it.

How then can the individual, as a part of an institution, avoid the loss of personality? Dr. Tuve emphasized that the important part of this problem is the status of individuals in the middle and lower levels of organizations. We need not concern ourselves, he said, with enlarging opportunities for control by leaders at the top; the real challenge is so to organize the structure of the institution as to increase personal satisfaction for the large number in subordinate positions. Mr. Golden gave the answer in generalized form: the development of democracy within the organization. Unless institutions are on guard against antidemocratic tendencies within themselves, they are sources of danger.

Two aspects of organizational policy to achieve a greater degree of internal democracy were stressed by more than one of the speakers. These were the importance of communication and the necessity for participation. Dr. Tuve in particular stressed the problem of communication, not simply to permit the individual to become familiar with the problems confronting the organization, but in the other direction as well, to make it possible for the individual to help shape the life and purposes of the institution of which he is a part. He expressed serious concern, however, lest the method of selection of individuals for posts of responsibility be one-sided. There are two aspects of mental activity, the rational and the aesthetic. The aesthetic type of mind is more sensitive to questions of value; that is to say, ends, goals, and purposes. Dr. Tuve suggested that in education, in personnel selection, and in the tendencies of our culture generally, we may be "selecting against" individuals with aesthetic sensitivity, and we may thereby distort the social situation "by excessive bias in favor of individuals who show great prowess in the rational area of mind." But without communication in the area of values, so that goals or ends may be established by agreement, free institutions can hardly survive.

(*Continued on page 452*)

## SOCIAL IMPLICATIONS

(*Continued from page 450*)

The members of the panel expressed differing opinions as to how far the loss of individual participation has gone, and how much it may be recovered. When questioned, Señor Contreras declared that in his own field of architecture and planning, technical training is necessary and the ordinary individual is not well enough educated to participate in the planning process. Senator Flanders declared that the loss of the sense of participation has proceeded unequally in different fields. In the economic institutions of an industrial society it has obviously gone very far, though partial compensation has come through the labor movement and other social organizations. In politics, he insisted, the process has been very slow, at any rate on the basis of an arithmetical computation. Each member of Congress does represent more citizens than in the past, but this dilution of the influence of the individual voter has come about very gradually over a long period. The real problem in politics, Senator Flanders stated, arises from the growing complexity of the issues with which the voter must deal. The dangerous consequences of error are magnified in an interdependent industrial community. The answer is education; but at the same time the difficulties must be recognized. A fundamental one is that, for the most part, "those who have the requisite knowledge and seek to transmit it to the voter belong to a different class than does the voter himself." There is a tendency, in other words, for the vision of individuals to be limited by the interests of economic groups, and for genuine communication between groups to break down.

Douglass V. Brown, Alfred P. Sloan Professor of Industrial Management at M.I.T., served as the moderator of the panel, and George P. Shultz, an instructor in the Department of Economics and Social Science, was an aide. — C.C.W.

## *State, Industry and University*

As moderator of the panel on "The State, Industry and the University," Julius A. Stratton, '23, Professor of Physics at M.I.T., saw the practical question before the group as the means by which private institutions are to survive in the face of the growing cost of advanced study. The members of the panel, in the order in which they spoke, were: Lee A. DuBridge, President, California Institute of Technology; Bryn J. Hovde, President, The New School for Social Research; Peter H. Odegard, chairman, Department of Political Science, University of California; John D. Russell, Director, Division of Higher Education, United States Office of Education; and Laird Bell, chairman, Board of Trustees, University of Chicago. This panel discussion was held in Morss Hall on the afternoon of April 1, and there were approximately 1,000 people in attendance.

In general, it may be said that Dr. Russell and Dr. Hovde looked with favor upon the role of the state in education, whereas Drs. DuBridge and Odegard had reservations in this matter. Dr. Bell, on the other hand, stressed industrial help to education.

(*Continued on page 453*)

## SOCIAL IMPLICATIONS

(*Continued from page 452*)

Dr. DuBridge, the opening speaker, thought it both necessary and desirable for the government to provide funds for research in the universities since the strengthening of science is a matter of national interest. Such grants should be properly administered and subject to cancellation by the university. Under such conditions one need not fear the dangers of Federal control in higher education.

He also supported the use of Federal funds for scholarships to gifted but needy students, but vigorously opposed direct subsidy of private institutions through the medium of outright Federal grants. Anything which a government agency supported financially, it must of necessity also control. Such a situation would lead to a dangerous interference with the freedom of intellectual inquiry. In conclusion, Dr. DuBridge called for a revision of the Federal tax laws so that private and corporate giving to institutions of higher learning can be expanded. Failure to do this will lead either to the impecuniousness of such institutions or to their subservience to government.

Dr. Hovde observed that each of the three instrumentalities under discussion interact upon one another. While they may at times appear to be at odds with one another, in a democracy this cannot be. Nonetheless, they sometimes do not "correspond identically in the degree to which they themselves are altered by the processes of social change." A democracy has the obligation to keep them as closely in consonance as possible.

He stated that "the evolution of American society is steadily in the direction of the positive social service state." Today one of the state's major concerns is education. It is the duty of the university to "learn to conform itself to society" and to give to its students an understanding of the progressive evolution of society. Dr. Hovde, in conclusion, hastened to add that he did not imply that students should be inculcated with "any monolithic viewpoint." Rather should the university exist on a high level "where the winds of opinion blow freely."

Dr. Russell, as the only representative of the Government on the panel, not unnaturally represented the state in a most favorable light. "After all," he said, "it is but you and I, the sum total of all its members." Nor did he manifest any apprehension over the proposal of the President's Commission on Higher Education to increase the number of students in our colleges and universities quite substantially. He felt that the increase would be borne by state institutions.

Dr. Odegard would prevent a state monopoly of higher education by bending every effort to conserve and strengthen the private colleges and universities. Industry can help to conserve a free spirit and a free market for ideas by granting generous support to the private institutions. Should even the smallest of these schools succumb to the ever increasing costs of maintaining themselves, it would be disastrous to the nation, he asserted.

General education must rid itself of nonessentials if it is to survive against the onslaughts of vocational training. Finally, the less politicians have to do with

(*Concluded on page 454*)

## SOCIAL IMPLICATIONS

(*Concluded from page 453*)

education, the better, because the measure of freedom in our world is the measure of freedom on the campus.

The final speaker, Dr. Bell, decried the trend toward more and more dependence upon government help. Government must not be allowed to do the whole job. Industry must at least be a junior partner. It needs to be remembered that private enterprise can make a contribution that government cannot duplicate because "scientific genius is more likely to flourish outside of government service than in it."

To resolve the problem of how industry may best aid the university, Dr. Bell offered a specific suggestion. He would establish an agency intermediate between industry and the college, to which a particular industry and all co-operating industries could make contributions, with the agency taking the responsibility for the effective distribution of the funds. The various advantages which such an agency would possess were then outlined.

At 4.30 P.M., Dr. Stratton quite reluctantly had to call a halt to the discussion and thanked the speakers for their stimulating contributions – a recognition which the audience seconded by its generous applause. H. Guyford Stever, Assistant Professor of Aeronautical Engineering at M.I.T., served as assistant moderator on this panel, and Richard H. Koenig, '50, as a student aide. – T.H.D.M.

## THE HALF CENTURY AHEAD

(*Continued from page 419*)

of a world-wide code of conduct for capital abroad. Excessive risks for this capital must be underwritten by society as a whole, to remove the need or excuse for excessive profit and exploitation.

In a very brief space of time there have come major indications of an amazing development flowing out of the independence of Israel, not only affecting the growth of resources and advancing conditions of living not only in the new nation, but in addition causing a constructive stirring in neighboring Arab states.

Someone could well say that there cannot be a bright prospect for world peace and for progress of mankind whatever happens in the programs we have discussed, unless a mechanism of government is developed on a world level to administer the natural rights of man, to adjudicate differences between peoples, to stabilize and police world situations. Of course this objection is right. And it is constructive to urge this necessity. But as we analyze the three philosophies I have described, it must appear crystal clear that no major portion of the world that follows the materialistic concept of the nature of man can be included, or will permit itself to be included, in a world administrative machinery unless that apparatus be one dominated by a concept of force. Furthermore, in all major component parts there is the concept of a higher justice, of natural rights of man, with the self-

(*Continued on page 456*)

# PNEUMATIC AND HYDRAULIC

# *ASH*

# CONVEYOR SYSTEMS

E. G. FARRAND, '21

*Secretary and General Manager*

UNITED CONVEYOR CORP.

CHICAGO 5, ILLINOIS

## THE HALF CENTURY AHEAD

(*Continued from page 454*)

restraint and the self-discipline that comes with it. It is difficult to see how a world structure for administration over all men can be successfully maintained unless there is that agent developed. We had better develop the lesser agencies and commissions and courts and arbitration systems in the Atlantic community and in the broader community of those who move in our philosophic stream, and make an effort to expand a similar concept in other parts of the world.

As a part of this growth we should note the vital necessity for a currency, or medium of exchange, which with reasonable speed and stable convertibility can be the helpful agent for the movement of goods and services between peoples. There must be unceasing concentration upon this major task in the Atlantic community and beyond. It may well be found that an internal problem in currency proposes an impelling need for the establishment of a Bank of the Atlantic. Such a Bank of the Atlantic should issue an appropriate currency, backed in part by gold, available for those many circumstances in which direct exchange of national currencies is no longer feasible.

The United Nations Charter has within itself the means for strengthening and developing its provisions in all essential respects on the world level. Our Government and other governments should appoint commissions to address themselves to the many complicated and difficult problems that will be involved in establishing a minimum of effective government at a future time at a world level. Obviously in its present form, with its vetoes and weakened by lack of police power, the United Nations is sadly inadequate to meet its own high purposes.

I would nevertheless caution that we must not underestimate its value, even in its present weak form. Without such an organization, limited though it be, so clear an understanding of the devious and distorted and dangerous policies of the Politburo of Russia could not have been acquired so quickly by the overwhelming majorities of the peoples of the world. Without it, economic recovery from the damage of war could not have moved forward as rapidly as it has. Without it, Israel today would not be a free and developing state, substantially at peace. Without it, we already would have lost the lingering hope of peace with freedom and justice on the earth!

Each session of the United Nations and each of its committees and bodies should be looked upon as an opportunity for a serious, thoughtful informative discussion of these subjects.

Clearly our education in the years ahead must convey to our youth an understanding of each of these philosophies, of their manifestations, their meanings, their mechanism. This can best occur through the development of general education conducted with true academic freedom. We should not attempt to indoctrinate our youth with narrow zeal for America as it is, but rather to open the avenues for personal growth,

(*Concluded on page 458*)

John:

The high capacity and quiet operation should make them suitable for our new building. Will you please get prices and data?

E. H. K.

## THE HALF CENTURY AHEAD

(*Concluded from page 456*)

develop the broad understanding of our basic concepts, instill a deep appreciation of the progress our country has made in relationship to those truths, and the progress others have made, and encourage a determination to use the avenues of peaceful change through democracy for constantly improving our America and the lot of all mankind.

Of course, we have not attained the ideals marked out by this warm humanitarian philosophy. For true ideals, springing from a great philosophy, are like the stars in the heavens. You cannot ever reach them with your hands, but if you understand them and see their location, they will guide you aright. Such ideals are as valuable, as aids to navigation through the social, economic, and political troubles of the day, as are the stars in the heavens for navigation over the sea, through the air, or across the desert. As Browning wrote so optimistically, so beautifully,

"Ah, but a man's reach should exceed his grasp,
Or what's a heaven for?"

We seek for mankind a better life, a more fruitful life, a happier life. An ever deeper understanding of our dynamic philosophy of life, with an unending determination and unfaltering courage to apply it, can lead, yes, I believe will lead, to a brilliant half century now opening before mankind.

## THE TWENTIETH CENTURY

(*Continued from page 413*)

German sentiment may be avoided by the Western Powers. The revival and union of Europe cannot be achieved without the earnest and freely given aid of the German people.

This has certainly been demonstrated by the Berlin Air Lift, which has fully justified itself. Nevertheless, fear and its shadows brood over Western Europe today. A month ago in Brussels I spoke to a meeting of 30,000 Belgians. I could feel at once their friendship and their anxiety. They have no Atlantic Ocean, no English Channel, between them and the Russian Communist armoured divisions. Yet they bravely and ardently support the cause of United Europe. I was also conscious of the hope and faith which they, like the Greek people, place in the United States. I can see the movement of this vast crowd when I spoke with the hands – strong hands – stretched out across the ocean. You have great responsibilities there for much faith is placed upon you.

We are now confronted with something quite as wicked but in some ways more formidable than Hitler, because Hitler had only the Herrenvolk pride and anti-Semitic hatred to exploit. He had no fundamental theme. But these 13 men in the Kremlin have their hierarchy and a church of Communist adepts, whose missionaries are in every country as a Fifth Column,

(*Continued on page 459*)

(*Continued from page 458*)

obscure people, but awaiting the day when they hope to be the absolute masters of their fellow countrymen and pay off old scores. They have their anti-God religion and their Communist doctrine of the entire subjugation of the individual to the State and behind this stands the largest Army in the world, in the hands of a Government pursuing imperialist expansion, as no Czar or Kaiser had ever done.

I must not conceal from you tonight the truth as I see it. It is certain that Europe would have been communized, like Czechoslovakia, and London under bombardment some time ago but for the deterrent of the atomic bomb in the hands of the Unied States.

Another question is also asked. Is time on our side? This is not a question that can be answered except within strict limits. We have certainly not an unlimited period of time before a settlement should be achieved. The utmost vigilance should be practiced but I do not think myself that violent or precipitate action should be taken now. War is not inevitable. The Germans have a wise saying "The trees do not grow up to the sky."

Often something happens to turn or mitigate the course of events. Four or five hundred years ago Europe seemed about to be conquered by the Mongols. Two great battles were fought almost on the same day near Vienna and in Poland. In both of these the chivalry and armed power of Europe were completely shattered by the Asiatic hordes and mounted archers. It seemed that nothing could avert the doom of the famous Continent from which modern civilization and culture had spread throughout the world. But at the critical moment the Great Khan died. The succession was vacant and the Mongol armies and their leaders trooped back on their ponies across the 7,000 miles which separated them from their capital in order to choose a successor. They never returned till now.

We need not abandon hope or patience. Many favorable processes are on foot. Under the impact of Communism all the free nations are being welded together as they never have been before and never could be, but for the harsh external pressure to which they are being subjected. We have no hostility to the Russian people and no desire to deny them their legitimate rights and security. I hoped that Russia, after the war, would have access, through unfrozen waters, into every ocean, guaranteed by the world organization of which she would be a leading member; I hoped that she should have the freest access, which indeed she has at the present time, to raw materials of every kind; and that the Russians everywhere would be received as brothers in the human family. That still remains our aim and ideal. We seek nothing from Russia but good will and fair play. If, however, there is to be a war of nerves let us make sure our nerves are strong and are fortified by the deepest convictions of our hearts. If we persevere steadfastly together, and allow no appeasement of tyranny and wrongdoing in any form, it

(*Concluded on page 460*)

## THE TWENTIETH CENTURY

(*Concluded from page 459*)

may not be our nerve or the structure of our civilization which will break, and peace may yet be preserved.

This is a hard experience in the life of the world. After our great victory, which we believed would decide the struggle for freedom for our time at least, we thought we had deserved better of fortune. But unities and associations are being established by many nations throughout the free world with a speed and reality which would not have been achieved perhaps for generations. Of all these unities the one most precious to me is, to use an expression I used first at Harvard six years ago, and one most precious to me, the fraternal association between the British Commonwealth of Nations and the United States. Do not, my friends, I beg of you, underrate the strength of Britain. As I said at Fulton, "Do not suppose that half a century from now you will not see 70,000,000 or 80,000,000 of Britons spread about the world and united in defense of our traditions, our way of life, and the world causes which you and we espouse." United we stand secure. Let us then move forward together in discharge of our mission and our duty, fearing God and nothing else.

## STATE OF SCIENCE

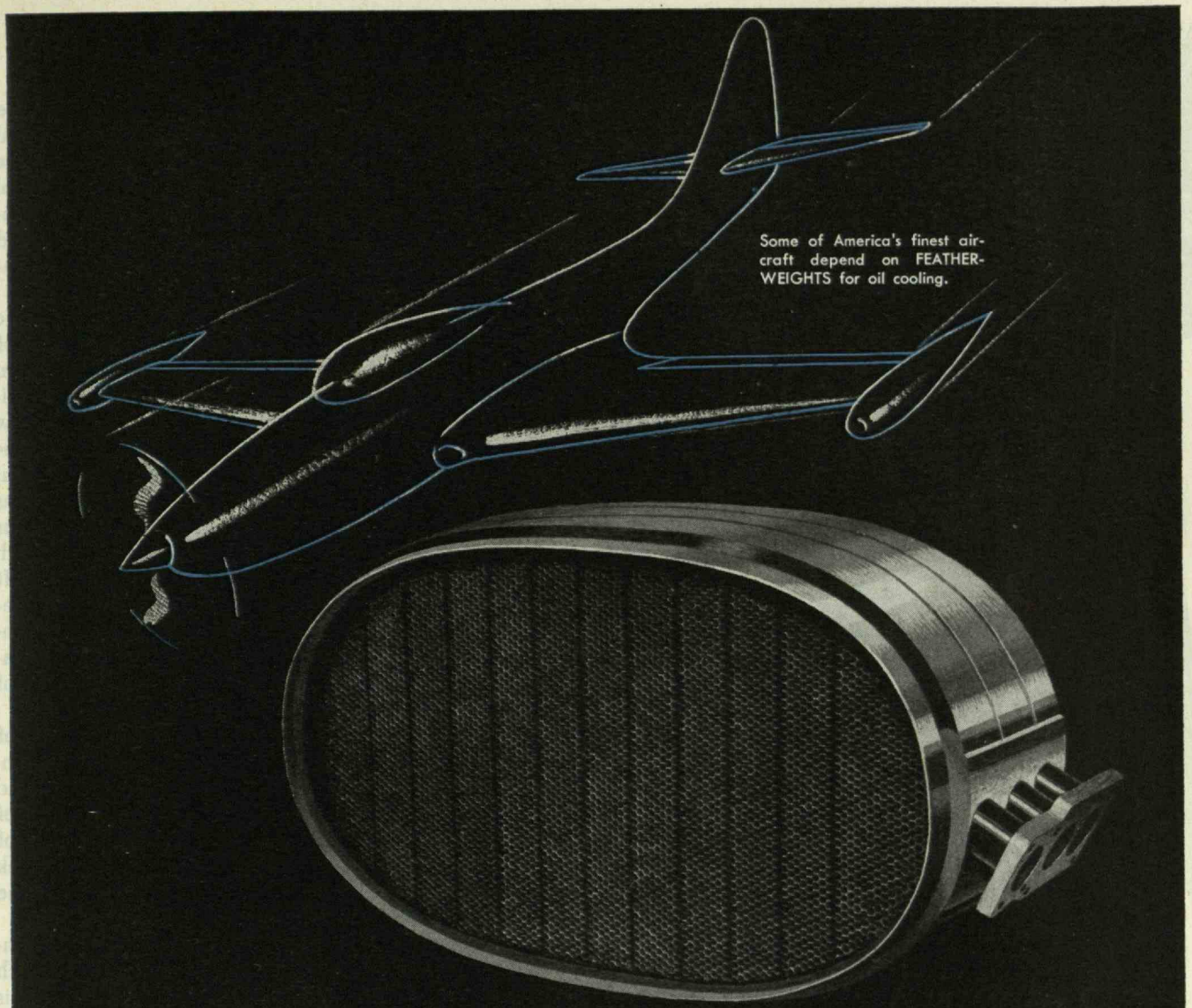
(*Continued from page 407*)

conceived of the military applications of nuclear energy before either officialdom or industry even knew of the existence of this new phenomenon. The project barely survived the skepticism with which it was initially received by many of the nonnuclear scientists and engineers who became concerned with it, but by the end of 1942 its potentialities had become well established and the great Manhattan Project was undertaken, with close co-operation between the carefully selected scientific groups from the United States, the United Kingdom, and Canada.

The rest of the story is now written into the history of the dramatic ending of World War II with Hiroshima and Nagasaki; of the efforts to turn atomic energy into an instrument, through international control, for the maintenance of permanent peace; and of the current work under our Atomic Energy Commission to develop peacetime uses of atomic energy and radioactivity which are already beginning to influence the processes of industrial production and medical practice, and to open entirely new fields of exploration in chemistry, geology, metallurgy, physiology, botany, and agriculture. On the horizon still uncertainly loom the possibilities of useful production of power for ship or aircraft propulsion and other special applications of heat and power.

In this story we see the sudden merging of the results of many lines of investigation which had previously proceeded almost independently: 50 years of research on radioactivity; 20 years' development of high-voltage machines; the equivalence of mass and energy announced by Einstein as early as 1905 as part of his theory of relativity; several decades of study of cosmic rays; 50 years' development of electronics; the

(*Continued on page 462*)




# Why Feather-Weights lead in dependability

Unique construction and superior testing make FEATHER-WEIGHT Oil Coolers first choice for more and more modern aircraft.

Light, strong and compact because of patented aluminum alloy brazing of their thin all-aluminum sections, FEATHER-WEIGHTS offer the maximum weight-strength combination.

Thoroughly tested in our wind tunnel laboratory, the largest, most modern in the aeronautical heat exchanger industry, FEATHER-WEIGHT performance is accurately predicted under actual flying conditions.

**Inquiries concerning FEATHER-WEIGHT all-aluminum oil coolers are invited. CLIFFORD MANUFACTURING COMPANY, 142 GROVE STREET, WALTHAM 54, MASS. *Division of Standard-Thomson Corporation.* Offices in New York, Chicago, Detroit, and Los Angeles.**

Feather-Weight **CLIFFORD** HYDRON Metal Bellows

ALL-ALUMINUM OIL COOLERS FOR AIRCRAFT ENGINES

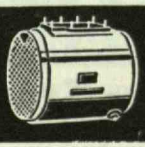
HYDRAULICALLY-FORMED BELLOWS AND BELLOWS ASSEMBLIES

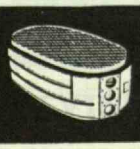

Instrument Bellows


Aircraft Bellows Assembly


Steam Trap Bellows Assembly


Bellows Seal Assembly


All-Aluminum Cylindrical Oil Cooler


All-Aluminum Oval Oil Cooler

(*Continued from page 460*)

whole modern art of chemical separation; the science of radiology whose impetus had come from medical applications of x-rays and the rays from radium; the most modern refinements of metallurgy, of chemical and electrical engineering. And the practical consummation of the atomic energy objectives has called upon the highest skills of engineering design and instrumentation. It is truly an exciting picture!

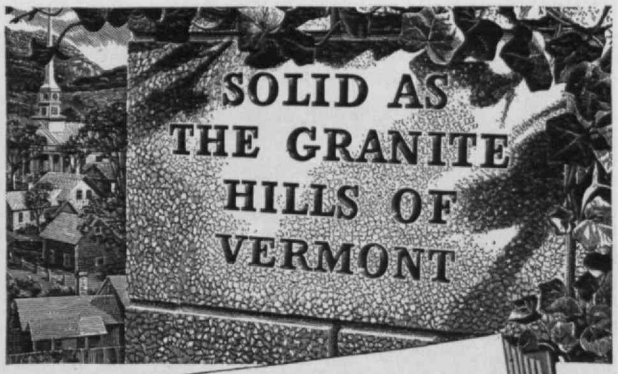
I might have described many other scientific achievements of our century, such as the synthesis of complicated organic chemicals; the developments in aerodynamics or those like radio, radar, and television in the field of communications; the exciting new discoveries of hormones and their influence on physiological and emotional processes in animals and man; or the growth of the automobile industry which has so profoundly influenced our personal lives and our business operations. But I elected to dwell at length on this story of atomic energy for several reasons. It is the most striking scientific and technological development of our century; it best illustrates the methods of scientific discovery and its practical application; from it can be drawn many lessons, some of which I would mention.

The first lesson is the co-operative character of scientific progress, depending on the stimulating interplay of ideas and the accumulation of facts and skills contributed by many scientists. In my survey of nuclear science progress I mentioned only some of the most significant steps in this progress, but back of it all and filling in the gaps was the work of some thousands of other research workers.

A second lesson is the unpredictable and uncontrollable origin of the new ideas and discoveries which produce scientific progress. It was to emphasize this point that I mentioned the origins of the major discoveries which led up to the atomic energy program. Many scientists from many parts of the world contrib-

(*Continued on page 464*)

# HAVE YOU CONSIDERED A CAREER IN *Security?*




## NATIONAL LIFE GENERAL AGENTS

| | |
|---|---|
| **ALABAMA** *Birmingham* | H. Lacy Daniel, Empire Bldg. |
| **CALIFORNIA** *Los Angeles* | Walter J. Stoessel, Edwards & Wildey Bldg. |
| *San Diego* | J. William Knibbs III, 1616 Fourth Avenue |
| *San Francisco* | S. Carlisle Martin, Crocker 1st Nat'l Bank Bldg. |
| **COLORADO** *Denver* | Standart & Main, Patterson Bldg. |
| **CONNECTICUT** *Hartford* | Harold Smyth, 36 Pearl Street |
| *New Canaan* | John J. Kellam, Brushy Ridge Road |
| **DELAWARE** | (See Philadelphia, Pa.) |
| **DIST. OF COLUMBIA** *Washington* | Edward H. Von Deck, Edmonds Bldg. |
| **GEORGIA** *Atlanta* | Harold T. Dillon, Haas-Howell Bldg. |
| **ILLINOIS** *Bloomington* | Bruce L. Crosthwait, Unity Bldg. |
| *Chicago* | Merrill W. MacNamee, 208 So. LaSalle Street Bldg. |
| **INDIANA** *Indianapolis* | Victor E. Pinkus, Illinois Bldg. |
| **IOWA** *Cedar Rapids* | C. Vance Shepherd, Dows Bldg. |
| *Sioux City* | William R. Grady, Badgerow Bldg. |
| | Charles A. Elliott, Bryant Bldg., Kansas City, Mo. |
| **KANSAS** | |
| **KENTUCKY** *Louisville* | Wilton R. Long, Starks Bldg. |
| **MAINE** *Bangor* | Howard M. Goodwin, 23 Hammond Street |
| *Portland* | Richard L. Small, Chapman Bldg. |
| **MARYLAND** *Baltimore* | Leonard V. Godine, Maryland Trust Bldg. |
| **MASSACHUSETTS** *Boston* | T. Temple Pond, 79 Milk Street |
| *Springfield* | Howard C. Shaw, 44 Vernon Street |
| **MICHIGAN** *Battle Creek* | Floyd C. White, Central Tower Bldg. |
| *Detroit* | George M. Robinson & Son, United Artists Bldg. |
| *Flint* | McKinnon & Mooney, Paterson Bldg. |
| **MINNESOTA** *Minneapolis* | Lloyd O. Swanson, Baker Bldg. |
| *St. Paul* | Floyd G. Bean, Pioneer Bldg. |
| **MISSOURI** *Kansas City* | Charles A. Elliott, Bryant Bldg. |
| *St. Louis* | The Rench Agency, Boatmen's Bank Bldg. |
| **NEBRASKA** *Omaha* | Harold F. True, Keeline Bldg. |
| **NEW HAMPSHIRE** *Manchester* | Wellman-Burroughs Agency, 886 Elm Street |
| **NEW JERSEY** *Newark* | Fred S. Fern, National Newark Bldg. |
| **NEW YORK** *Albany* | R. Roy Casey, State Bank Bldg. |
| *Binghamton* | R. Clinton Meadows, Press Bldg. |
| *Buffalo* | Arthur L. Beck, Genesee Bldg. |
| *New York City* | Edgar T. Wells, 55 Liberty Street |
| | William H. Bender, Jr., 17 E. 42nd St. |
| *Plattsburg* | Harry J. Terwilliger, 5 Court Street |
| *Rochester* | Bruce S. Johnson, Reynolds Arcade Bldg. |
| **NORTH CAROLINA** *Greensboro* | Andrew M. McGlamery, Southeastern Bldg. |
| **NORTH DAKOTA** *Fargo* | Fargo Investment Company, Riley Bldg. |
| **OHIO** *Cincinnati* | Ray F. Hodges, Atlas Bank Bldg. |
| *Cleveland* | Truman H. Cummings, N. B. C. Bldg. |
| **OKLAHOMA** *Oklahoma City* | C. Edgar Van Cleef, Colcord Bldg. |
| **OREGON** *Portland* | William J. Smith, Pacific Bldg. |
| **PENNSYLVANIA** *Harrisburg* | John L. Tivney, Penn. Ch. of Com. Bldg. |
| *Philadelphia* | Clifford H. Orr, 1616 Walnut Street |
| *Pittsburgh* | Reginald S. Koehler, Jr., Oliver Bldg. |
| **RHODE ISLAND** *Providence* | Ralph C. Bevan, Turk's Head Bldg. |
| **SOUTH DAKOTA** *Sioux Falls* | Homer D. Hildebrand, Boyce-Greeley Bldg. |
| **TENNESSEE** *Chattanooga* | James B. Irvine, Jr., Chattanooga Bank Bldg. |
| *Memphis* | Clyde R. Welman, First National Bank Bldg. |
| **VERMONT** *Montpelier* | Fred S. Brynn, 97 State Street |
| **VIRGINIA** *Roanoke* | William B. Richardson, Liberty Trust Bldg. |
| **WASHINGTON** *Seattle* | Rénaldo A. Baggott, Henry Bldg. |
| **WEST VIRGINIA** *Charleston* | Herbert W. Cardwell, Kanawha Bk. & Tr. Bldg. |
| **WISCONSIN** *Milwaukee* | R. Wayne Allison, The 110 E. Wisconsin Bldg. |

*"See your National Life underwriter at least once a year"*

Many a man has graduated from college without knowing for which field of business endeavor he is best suited. Many a recent graduate has found himself a misfit in his first choice of career.

To young men in doubt as to their qualifications, National Life offers aptitude preference and vocational interest tests. As a result, we have been able to give many promising men a good start in the rewarding business of providing family security. Those who demonstrated no ability for underwriting have been guided into fields offering greater scope for their particular gifts.

If you would like to know where your best business talents lie, we invite you to get in touch with the National Life General Agent nearest you. He will be glad to arrange a test for you. There is no charge or obligation of any kind.


FOUNDED 1850 · A MUTUAL COMPANY
OWNED BY ITS POLICYHOLDERS

(*Continued from page 462*)

uted the building blocks which, piled each on the ones below, completed the structure. The fact that it was done so quickly is explained by the quick and free channels of communication, often supplemented by personal acquaintance, which have traditionally characterized the scientific fraternity the world over. It is more than tragic that any nation should seek to restrain the great flow of knowledge across the world or, within national boundaries, should seek to direct its course or make it subservient to the current politics of the state. That such a policy will ultimately stifle the birth and development of significant ideas is scarcely open to dispute. For nowhere more than in science is Donne's statement true "that each is a part of the maine," and the killing off of scientific ideas in one area impoverishes the world.

Engineering developments can usually be carried through in accordance with a plan carefully prepared in advance, and often this can be done most effectively by a competent self-contained group like a company or a bureau. But scientific discovery, in its very nature and as proved by experience, does not progress according to preconceived plan and is stifled if attempts are made to control the free initiative of the research workers or to limit the freedom of communication between them. This is one reason why most of the fundamental new scientific discoveries have originated in free environment of the universities rather than in the quite properly more controlled atmosphere of industrial or governmental laboratories. When, however, it comes to practical applications and engineering developments, then thorough planning and control are essential to efficiency. Thus the third lesson which I would draw is this: to the extent that we wish fundamental science to advance, we must maintain the maximum of opportunity for competent scientists to follow their own bent and to communicate freely with each other.

The fourth lesson is, at first sight, in apparent contradiction with the last, but actually it is not. It is that teamwork has proven extraordinarily effective in producing results. To a certain extent, of course, teamwork implies control, which I have just decried. But what I mean by a team is a group of competent and imaginative project leaders whose skills and knowledge supplement each other and are supported by the technical assistance required to carry out their ideas.

(*Continued on page 467*)

## STATE OF SCIENCE

(*Continued from page 464*)

Such groups actually provide the maximum opportunity for quick initiative and for stimulating interchange of ideas. As science becomes more complex, or as its practical applications come more to the fore, the advantages of such team organization become more pronounced.

The fifth lesson, which needs no amplification, is the increasing extent to which a basic advance in theory or technique in one branch of science is likely to provide new concepts or new tools which can open up new frontiers for exploration and exploitation in other fields of science or art. This is not a new idea. It was for this reason, for example, that the Rockefeller Foundation established, under the National Research Council, the great program of National Research Fellowships which were largely effective within a decade or two in raising the United States from a third-rate to a first-rate world position in science. The Rockefeller Foundation hoped, by thus stimulating advance in the fundamental sciences, to uncover new avenues of approach to medical science – a hope that has been brilliantly justified. And another lesson which can be drawn comes from the realization that an astonishing proportion of today's leaders in American science, and of the project leaders who were the key men in our great scientific program during World War II, were men who had received their inspiration and training in independent research under this National Research Fellowship program.

Let me now conclude this address by a look to the future. I might discuss this in terms of current scientific programs. I could describe the race between the cosmic-ray scientists who, from mountain top, airplane, and balloon, seek to utilize the still unknown energies of the cosmos to search out even more of nature's fundamental secrets of matter and energy, and the high energy machine scientists who, with Van de Graaff generator, cyclotron, betatron, and synchrotron, are reproducing cosmic phenomena in the laboratory. It remains to be seen which group will discover the most for the fewest millions of dollars. This much can be said: both groups are meeting with exciting successes, and each stimulates and supplements the other.

Or I could try to describe some of the opportunities for the use of radioactive chemical isotopes, produced by cyclotrons and atomic piles, as tools in other lines of research. Of this, Dr. Shields Warren, Director of the Division of Biology and Medicine of the Atomic Energy Commission, said at the Eighth Annual Science Talent Dinner in Washington this month:

> . . . an event, the scope of which can be but dimly appreciated, has recently occurred in the development of atomic energy. First, a revolutionary concept in physics has been developed and proved and active experimentation as to its potentialities is well under way. Second, a method of tagging atoms by radioactivity so that chemical and biologic processes can be followed through in great detail is now at hand. Through this radioactivity accurate

(*Continued on page 468*)

(*Continued from page 467*)

measurement of minute quantities is now feasible, for as little as one million billionth of an ounce of radio phosphorus may be detected. Third, advance in knowledge of biologic effects of radiation permits changing some hereditary characteristics in plants or animals.

Or I could venture some speculations on the possible future role of synthetically manufactured hormones which, administered like insulin to a diabetic, could control the tendency to cancer, or produce a race of giants, or turn a general into a pacifist, or cure a schizophrenic.

Or I might review the interesting theories of the universe. Is it finite; is it expanding; is it still being created; what maintains the heat of the stars and how old are they; what is their internal constitution and what forces and energies account for their condition?

But such considerations are ruled out by the limitations of both my time and my knowledge. I shall therefore approach the future more as I introduced the past, in terms of some of the problems which face our society and in whose solution science may be able to assist.

In view of the prodigious strides which science and technology have made in our century, what remains to be accomplished? From our own point of view the United States might appear to be at the summit of its industrial greatness. The young country which, in 1849, was sending its first railroads across an undeveloped territory and pouring eager thousands of its citizens into the frantic California gold rush, in 1949 has spread across a continent and developed the land from coast to coast. Its teeming agriculture has reached new heights of productivity so that we have been able to feed not only ourselves but much of the war-torn world as well. Our industries thrive, the majority of our people are well employed at good wages, and the chief danger seems to be that we may overextend ourselves and push prosperity beyond the point of stability. At a glance, this picture would not seem to leave much for our creative energies.

A closer examination of the facts leaves less room for complacency. Not only do we have left to solve many problems of our own areas, but we have facing us also the inescapable fact of one world. Even if we were disposed to pursue our own destiny, unmindful of the rest of mankind, we have recognized that it is impossible to do so, and that our national good is strongly linked to the good of the rest of the world. This has been the philosophy underlying the Marshall Plan and of much of our postwar thinking.

One of our principal causes of concern as scientists is the grave interruption that foreign science suffered by the war, and we are anxious for its rehabilitation. The destruction of institutions and implements of learning has been a source of distress to scholars throughout the ages, and American scientists have viewed with a sense of personal loss the destruction of libraries, laboratories, and other important tools of learning as one of the sad by-products of war.

We should like to see foreign science restored to its

(*Continued on page 470*)

(*Continued from page 468*)

prewar vigor, not only in the interest of fundamental knowledge everywhere, upon which we and everyone can draw, but also because of the way in which a healthy body of science can contribute to economic and social recovery of all nations.

To my way of thinking, it would be a helpful and legitimate thing if those countries whose programs of scientific research were most seriously disrupted by the war would see fit to include funds for the rehabilitation of those programs in their requests for United States aid under the provisions of the Foreign Assistance Act of 1948. I believe that such requests should be sympathetically received, since sound plans for economic development must rest upon technology supported by fundamental research. It is not difficult to envisage the ultimate practical good to be derived from renewed investigation in such fields as: utilization of human resources, food and nutrition, medical sciences, chemistry, physics, metallurgy, geology, meteorology, hydrology, engineering, and soil mechanics. If only a small percentage of Marshall-Plan funds were invested in this manner, there can be no doubt that rich returns of a long-range nature in material matters and in good will could be anticipated, beneficial alike to the countries concerned and to the United States.

The purposeful employment of science and technology to aid in economic reconstruction following a period of disaster is no new thing. Louis XV established the first significant school for civilian education in engineering as part of a program prudently directed to restoring French economy from the depression brought on by the extravagances of Louis XIV. In similar fashion, the great École Polytechnique was established in Paris in 1795 as part of the government's program of scientific and technical education designed to repair the economic ravages of the French Revolution. For a century, at least, L'École Polytechnique was the world's outstanding center of pure and applied science, and profoundly influenced French social and economic progress.

In Germany, where the statesmen had a peculiar appreciation for the practical values of technological education, this type of school was established in part as a recovery program from the economic chaos brought on by the Napoleonic Wars, and in part as an aid in competing with Great Britain in industry and trade. The famous technical schools in Germany became the very foundation stone of its industrial progress. Of them Whitehead has said:

. . . the Germans explicitly realised the methods by which the deeper veins in the mine of science could be reached. They abolished haphazard methods of scholarship. In their technological schools and universities progress did not have to wait for the occasional genius or the occasional lucky thought. Their feats of scholarship during the nineteenth century were the admiration of the world. This discipline of knowledge applies beyond technology to pure science, and beyond science to general scholarship. It represents the change from amateurs to professionals . . .

(*Continued on page 472*)

## STATE OF SCIENCE

(*Continued from page 470*)

Closer to our own day, we have the admirable example of the British, who, following World War I, established the million-pound research fund for stimulating renewed industrial activity. This marked the beginning of a great program of scientific research under private management but with governmental support which, in the results of fundamental research and creative invention, has been claimed to exceed that of the United States, at least on a per capita basis.

It follows, then, that one important task confronting science and technology today is to assist in rescuing world-wide economy from the setback suffered during World War II. This applies not only to the other war-devastated countries, but also to our own country where also the war seriously diminished the normal supply rate of new scientists and engineers and of new scientific discovery into those stockpiles of trained technologists and new ideas which should be our most important future asset.

It is to be hoped that our leaders of public affairs, in government and business and the professions, will be no less farsighted than those statesmen of earlier days. The postwar interest in research shown by our military departments, the favorable prospects for a National Science Foundation, and above all the recently increased liberality of American industrial firms in support of fundamental research within and without their organizations, are all encouraging signs.

An aspect of such problems which is in the traditional spirit of American altruism, but which is also of long-range bearing on our own welfare, was ably stated by the President in point four of his inaugural address when he said:

> We must embark on a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas.
>
> More than half the people of the world are living in conditions approaching misery. Their food is inadequate. They are victims of disease. Their economic life is primitive and stagnant. Their poverty is a handicap and a threat both to them and to more prosperous areas.
>
> For the first time in history, humanity possesses the knowledge and the skill to relieve the suffering of these people.

Already notable steps along such lines have been undertaken by a number of industrial companies which have been convinced that their long-term profitable business in relatively undeveloped areas is closely linked to the improvement in the living standards of the populations of these countries, for reasons both economic and political. Hence we see skillful programs in progress, by such companies as United Fruit, the oil companies and others, not only to raise wages but, more importantly, to apply the most modern arts of medicine and public health, soil utilization, seed selection and agricultural technique, education and recreation for improving the health, prosperity and morale of the peoples with whom they deal. The more of this that is done, the better and the safer the world will be.

(*Continued on page 474*)

## STATE OF SCIENCE

(*Continued from page 472*)

One of the lessons of history is that the improvement of man's physical and environmental well-being does much to contribute to the elimination of political and social unrest, and that the reverse promotes revolution. We know also that the constructive applications of science do improve man's environmental well-being if the gains from science are fairly distributed among the people. Hence we see, in the program advocated by the President, not only a program of altruism but also of utilizing technology in the interests of political stability and peace.

This subject will be given expert treatment in one of the panel discussions tomorrow. So, in fact, will many other goals of our current technological programs, about which I had originally thought of speaking. And I can obviously do little justice to much in my few remaining minutes. I would, therefore, simply state my credo and my conclusions by quoting two paragraphs from my recent Wallberg Lecture at the University of Toronto:

The people of our countries crave peace and security. They want protection against the perils of Nature, like floods, hurricanes, earthquakes, and droughts; and against man-made perils of transportation, fire, and group violence. Labor strives for steady employment at higher wages, shorter hours, and more comfortable working conditions. They want the quality of goods to go up and prices to go down. People want better and more adequate housing. Those in business want larger profits. Governments, in our expanding civilization, need more tax money. Everybody wants better health. Those who think much beyond the present envisage ahead what I believe to be the greatest ultimate challenge to mankind, and that not many generations in the future. It is the problem of maintaining our growing populations in the face of rapidly depleted natural resources without descent into a final world epoch of struggle for bare survival.

If we were to take the time to examine into all these needs and desires of men we would discover two facts. One is that science and engineering have positive contributions to make to every one of these requirements. The other is even more striking. I believe that technological progress is the only common denominator to them all — the only solution which can simultaneously satisfy these statements of human needs. Laws, ideologies, economic theories, ethics, and brotherly love can provide orderly distribution, reduce waste, and promote good-will among men, but they cannot create the wherewithal to satisfy all the apparently conflicting demands listed above.

(*Concluded on page 476*)


# Their experience may help answer your career question

The five men pictured above were among the large number who last year asked us a lot of questions about career opportunities.

One of their favorites — and probably yours too — went something like this: "What kind of earnings can I expect to make, especially during my first few years?"

In a way, that's a difficult question, because the answer depends entirely on you.

Perhaps the best way to answer it here is to give you some figures on what others have done. As an example, let's take the young men you see at the top of this page.

They are the five new men taken on last year by one of our Boston agencies. They ranged in age from 24 to 31. Only one had had any previous experience in our field, and this was limited to a few months. They began their association with us by taking our training course.

By the end of their first year — in a job that put them on their own, and in which they were their own masters — they had each written from $250,000 to $380,000 of life insurance. Their incomes ranged from $3532 to $5645. With renewal commissions, first-year earnings will range from $5824 to $9702. The average: $7409.

Four of these men, mind you, had no previous experience selling life insurance. Yet they all made a flying start. And their financial futures are as unlimited as their individual ability, energy, and initiative.

In addition to high-average incomes, they enjoy many other advantages. Among them: being their own boss; associating with congenial men, most of whom are college trained; financial advancement that depends on themselves rather than on seniority; working with the first-chartered, fastest growing company in our field; and, perhaps most important, the deep satisfaction of knowing they are performing a tremendously valuable service for their friends and clients.

If you'd like more facts and figures to help you make a career decision, I'd be happy to supply them to you. Just drop me a line at the New England Mutual Life Insurance Company, 501 Boylston Street, Boston 17, Massachusetts. The name is H. C. Chaney, Director of Agencies.

## STATE OF SCIENCE

(*Concluded from page 474*)

We must be prepared to take each step as it comes in these vast new fields which are open before us. The fact that all the answers are not immediately at hand is no reason for pessimism. It is in the American spirit of things to want to accomplish everything overnight, and in view of past triumphs of technology perhaps we may be forgiven for being sanguine of success in this venture. In the long run, it is not likely that our confidence will be disappointed.

In any event, today, as in every other time, the scientist still stands on the threshold of the unknown. Perhaps that is his greatest joy – what Huxley more than a half century ago called "the supreme delight of extending the realm of law and order even farther towards the unattainable goals of the infinitely great and the infinitely small, between which our little race of life is run."

## NEW SOCIAL MIND

(*Continued from page 402*)

This poses a troublesome question. The contemporary artist, if he adopts some form of realism, is either content with banal restatements of relatively unimportant subjects or portrays for us concepts which are clearly frightening; if he flees to abstraction he uses symbols which, unlike those of primitive man, are no longer common currency. If nonobjective painting is to be taken simply as a matter of pleasing decoration, this too suggests a low level of art significance.

Returning to the frightening canvases, they are disturbing no matter how one chooses to interpret them. If, as art has often been, these paintings constitute the sharpest interpretation of our time, then we are suffering unwittingly a mass neurosis or a cult of ugliness from which escape would seem difficult. If, again as artists have often done, the painters are foretelling with amazing foresight a near future, the implications are equally unpromising. Finally, if this art has nothing to do with reality, existing or forthcoming, then it indicates that artists, despairing of our culture, have already withdrawn themselves from it in the fashion of Epicurus. This also could be no cause for content.

If, on the other hand, the trouble is entirely with the artists and not with the culture, this too is unpleasantly suggestive. It would mean that we are in a period, of which there have been others through history, when the creation of beauty is a thing of negligible consequence. It would suggest that in one way or another our sense of the first-rate in matters of the spirit had decayed. This theme can and will be explored on the morrow and though approached from another point of view it should be relevant to assessment of art, since art is after all but one facet of the spiritual attitudes of man.

Regardless of the hypothesis, the conclusions from art of our time are not promising. But this result is surely not a consequence solely of the growth of science, or even principally such a consequence. It relates rather to the total morality of the time, of which, like art, though at the other pole, science is but a part.

(*Continued on page 478*)

## NEW SOCIAL MIND

(*Continued from page 476*)

One more thing perhaps needs to be said about the relations of scientific progress to the meaning of art. Since the most primitive days there has never been a time in the history of man when it has been possible for art and music to come so fully into the life of every man. The common man of the Middle Ages or of the Renaissance was chained to his locale; he might participate freely enough in the local riches and did so when there were any, but he was at the mercy of geography. With the growth of secular art and personal patronage, and above all of the museum and the art gallery and the concert hall, art and music became more steadily the privilege of the few.

Now applied science through developments in photography, printing, and electronics has made it a common experience, in the Western World at least, for any man to be able to see in his home first-rate reproductions of painting and to hear first-rate reproductions of music. It would be unimaginative to insist too firmly on the fact that they are reproductions and therefore inferior.

Though this opportunity has been partly embraced, it can hardly be alleged that it has been exploited as a major aspect of our cultural life. The great popular art of today is quite likely advertising art and not gallery painting. The great popular music is probably neither folk song nor great composition. In this failure both the artist and the entrepreneur seem to have been at fault. On the whole the best artists and composers seem not to have been prepared to embrace the new media as their primary outlets, taking advantage both of the possibilities and of the limitations of the medium as great art has always done heretofore. Rather they have contented themselves with painting and composing originals for enjoyment in the old ways, letting the matter of reproduction be what it will.

But it is likely that the artists themselves might have been more moved to work for the new popular media had they been more vigorously encouraged by those who manage the media, by the publishers of magazines, by the makers of records, by the designers of cinema, radio, and television programs. There have been notable exceptions to this generalization and enough dramatic experiments to show what might have been the case. This again means one of two things: either the entrepreneurs are shrewdly right and have properly assessed the cultural instincts of our time or they have disobeyed the cultural will of the people by their misinterpretation of that will.

We can scarcely determine the facts of these issues in these few minutes. But I have felt it worth while to elaborate this point because it shows so clearly how ridiculous it would be for society to demand of scientists and engineers that they take the full responsibility for the use of their discoveries and their designs. Should it have been expected, for example, that the men who made radio technically possible should thereupon also have insisted on taking charge of the use of radio, and somehow have devoted their time to persuading the creative artists to exploit the medium

(*Concluded on page 480*)

## NEW SOCIAL MIND

(*Concluded from page 478*)

to the full? Is it even plausible to suppose that the results would have been good, had the technological man gone off on this ridiculous tangent? The broader conclusions from analogy seem self-evident.

So we may return to our six questions which will be discussed tomorrow, with the aid of distinguished panels of men from all over the world, from university, from business office, and from the seats of government, men who have studied these problems long and wisely. We think that there is good reason to hope that as you remember these days you may say with the poet, "*Forsan et haec olim meminisse iuvabit.*"

The pattern of these meetings is simple and direct. Shortly we shall have an assessment of the accomplishments of science since the turn of the century, provided by a distinguished American physicist who has rendered a varied and conspicuous service to his nation both in scientific and in nonscientific matters; this evening we shall examine the political panorama of the same period through the eyes of a hero who could appropriately say, with Aeneas, "all of which I saw, and a great part of which I was."

Tomorrow we shall, with the aid of the panels, consider the questions just outlined; then on Saturday we shall set the milestone firm when we inaugurate Dr. Killian as the tenth president of this institution.

We are grateful to the many busy persons from so many lands who have been willing to leave their important affairs and come here to share their wisdom with us. We think there is reason to expect that when it is all over this may prove to have been another demonstration of the saying of Aristotle, "Search for truth is in one way hard and in another easy, for it is evident that no one can master it fully, nor miss it wholly. But each adds a little to our knowledge of nature, and from all the facts assembled there arises a certain grandeur."

# PROFESSIONAL CARDS

## JACKSON & MORELAND
*Engineers and Consultants*

Design and Supervision of Construction
Reports — Examinations — Appraisals
Machine Design — Technical Publications

BOSTON NEW YORK

## H. K. BARROWS, '95
M. Am. Soc. C. E.

CONSULTING HYDRAULIC ENGINEER

*Hydro-electric Developments — Water Supplies. Reports, Plans, Supervision. Advice, Appraisals*

6 BEACON STREET BOSTON, MASS.

## EADIE, FREUND AND CAMPBELL
CONSULTING ENGINEERS

500 FIFTH AVENUE NEW YORK 18, N. Y.

*Mechanical—Electrical—Sanitary*
*Air Conditioning—Power—Process Layouts*

J. K. Campbell, M.I.T. '11

## STARKWEATHER ENGINEERING CO.
INCORPORATED

*Engineers and Contractors for Pumping Plants Boiler and Power Plants, Cooling Water and Heat Recovery Systems*

246 Walnut Street, Newtonville BIGelow 8042

Wm. G. Starkweather, M.E. Cornell '92
J. B. Starkweather, B.S. M.I.T. '21

## THE KULJIAN CORPORATION
CONSULTANTS ✓ ENGINEERS ✓ CONSTRUCTORS

*Specialists in*

UTILITY, INDUSTRIAL and CHEMICAL FIELDS

1200 N. BROAD STREET PHILADELPHIA 21, PA.

H. A. KULJIAN, '19

## FABRIC RESEARCH LABORATORIES
INCORPORATED

*Research, Development and Consultation for Textile and Allied Industries*

665 Boylston Street Boston, Mass.

W. J. HAMBURGER, '21 K. R. FOX, '40 E. R. KASWELL, '39

## GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS

Malcolm G. Davis '25, *Vice President* Allen W. Reid '12 E. C. Edgar '35

Steam, Hydro, Diesel Power Plants; Industrial Structures; Plant Safety, Labor Relations, Utility Rates, Valuations, Reports; Large Scale Purchasing; Industrial Laboratory

New York, N. Y. Reading, Pa. Washington, D. C.
Philadelphia, Pa. Houston, Tex.

## FAY, SPOFFORD & THORNDIKE
*Engineers*

Airports — Bridges — Water Supply and Sewerage
Port and Terminal Works — Fire Prevention

INVESTIGATIONS DESIGNS
SUPERVISION OF CONSTRUCTION

BOSTON NEW YORK

## CLEVERDON, VARNEY & PIKE
*Consulting Engineers*

HERBERT S. CLEVERDON '10 WALDO F. PIKE '15

Structural Designs Foundations
Heating Ventilating and Plumbing Designs
Industrial Buildings, Reports, Investigations

120 TREMONT STREET BOSTON 8, MASS.

## MAURICE A. REIDY
*Consulting Engineer*

BRIDGES BUILDINGS
STRUCTURAL DESIGNS FOUNDATIONS
CONSTRUCTION CONSULTANT AND ARCHITECTURAL ENGINEER

*Estimates and Appraisals*

101 TREMONT STREET BOSTON, MASS.

## THE COSMA LABORATORIES CO.
1545 East 18th Street Cleveland 14, Ohio

Chemical Analysis — Testing — Consulting Engineering
Testimony and Research

H. SEYMOUR COLTON, M.I.T. '21, *Director*
R. W. FRISCHMUTH, Case '38, *Assistant Director*

## MORAN, PROCTOR, FREEMAN & MUESER
CONSULTING ENGINEERS

420 LEXINGTON AVENUE NEW YORK 17, N. Y.

Foundations for Buildings, Bridges and Dams;
Tunnels, Bulkheads, Marine Structures, Soil Studies and Tests; Reports, Design and Supervision

Pardo, Proctor, Freeman & Mueser
Ingenieros Consultores
Ap. Correos 614, Caracas, Venezuela

WILLIAM H. MUESER, '22

WILLIAM W. RUSSELL '22 EDGAR P. PALMER '25

## PALMER RUSSELL CO., *Realtors*
1320 Beacon Street Brookline 46, Massachusetts

COMPLETE MORTGAGE SERVICE

Business Loans to Corporations and Institutions

*Loan Correspondent for the Penn Mutual Life Insurance Company*

FAirmount 5105 EXpress 7766

## FRANK MASSA
*Electro-Acoustic Consultant*

3393 Dellwood Road 3868 Carnegie Avenue
CLEVELAND, OHIO

# The M. I. T. Alumni Fund

## OPPORTUNITIES, RESPONSIBILITIES, AND A PROBLEM

On the morning of April 2, 1949, James Rhyne Killian, Jr., '26, was inaugurated tenth president of M. I. T., the first alumnus to be so honored. Dr. Killian's address is printed elsewhere in these pages. Many of us heard it in full at the time. So many of his words, however, are of special consequence to us, as Alumni, that it seems pertinent to highlight a few passages on this page.

> The combination of the engineer, the economist, the regional planner, the architect and the sociologist provides a task force of exceptional power for the beneficent management of social forces. This combination of professions acting through industry and government can insure that science and technology work with maximum efficiency for social ends. We propose to maintain here an institute of technology creatively active in social technology.
>
> No college, in a world of turmoil, can shirk the responsibility of preparing a man to be a citizen as well as to make a living. As we stand at the mid-century point, the responsibilities of the professional men, especially the scientists and the engineers, have a new and awesome measure.
>
> Here at M.I.T. we have students from fifty-three foreign countries. Ambitious youth from the world over are turning to American institutions to learn useful professions in an atmosphere benign to learning and to the spirit of world citizenship. We have in this spirit of our educational institutions an exportable commodity that can contribute importantly to world prosperity and to world amity.
>
> It has been said many times, but should be said again, that our public institutions benefit from the freedom, flexibility, and independence of the private institutions. The strength of our university system lies in its diversity and its lack of centralization. The destruction of the private institutions would help to destroy this diversity.

These are words with which we are all in accord. Upon the shoulders of the Faculty and Administration falls the task of making them reality. Upon the shoulders of the Alumni, in part, rests the responsibility for providing the material basis for their work. One way in which this can be accomplished is through the annual Alumni Fund, used for capital purposes of M.I.T. To date, it has made possible the new Senior House, provided modern tennis courts, and made additions to the library. Last year almost 10,000 Alumni took part. If you were one of that number, the Institute is grateful for your welcome and much needed support. If you were not, the opportunity is again yours. A new year has just begun. Will you join with us in support of your institution, one in whose continued and important successes we can all take the greatest pride?

# Alumni AND Officers IN THE News

## *From the Publishers*

FREDERICK W. LORD'93 is the author of *Contracting as a Profession.* Published by Richard R. Smith, 1949.

CHARLES H. HUGHES'00 wrote the *Handbook of Ship Calculations, Construction and Operation.* This book has been revised to include advanced data. 3d Edition, McGraw-Hill Book Company, Inc.

ALBERT G. H. DIETZ'32, Director of the Plastics Research Laboratory and an Associate Professor at the Institute, is the editor of *Engineering Laminates.* John Wiley and Sons, Inc. 1949.

EGOR P. POPOV'34 contributed the article, "Bending of Beams with Creep," which was published in the March, 1949, issue of the *Journal of Applied Physics.* Volume 20.

RICHARD C. FOWLER'37 is the author of an article which appeared in the March, 1949, issue of *The Review of Scientific Instruments,* Volume 20, Number 3, entitled, "A Rapid Infra-Red Gas Analyzer."

W. RUPERT MACLAURIN, Personnel Officer, M.I.T., is the author of *Invention and Innovation in the Radio Industry,* the first volume in a series of studies to be made by the Institute on the economics of innovation. The Macmillan Company. 1949.

## *From the Societies*

RALPH T. WALKER'11 was elected president at the 81st convention of the American Institute of Architects which was held in Houston, Texas, in March. A. GLENN STANTON'21 and CHARLES F. CELLARIUS '16 were re-elected vice-president and treasurer, respectively. Alumni who were elevated to Fellowship in the Institute are: H. KENNETH FRANZHEIM'13, A. GLENN STANTON'21, EARL T. HEITSCHMIDT'22 and LOUIS H. SKIDMORE'23.

ERNEST W. DAVIS'12 was the moderator and CARLTON E. TUCKER'18, Professor of Electrical Engineering at the Institute, one of the speakers at a joint meeting of the Boston section of the American Institute of Electrical Engineers and the Massachusetts Society for Professional Engineers held on March 15. The subject under discussion was, "The Professional Status of the Engineer."

ALBERT HAERTLEIN'18, a professor at Harvard University, was the guest speaker at a meeting of the Boston section of the American Society of Refrigerating Engineers held on March 10. Professor Haertlein, who is the secretary of the Massachusetts Board of Registration for Professional Engineers, spoke on "House Bill 2024."

LAUREN B. HITCHCOCK'20 gave the presidential address before the annual meeting of the Commercial Chemical Development Association, held in New York on March 16. His subject was, "Putting New Chemicals to Work." Mr. Hitchcock retired as president after serving for two terms and was awarded a trophy by the Association. Alumni who are serving as officers in this Association include: Lawrence H. Flett'18, William B. Plummer'21, John J. Schaefer '21, William H. Harding'23, James H. Boyd'26 and John B. Calkin'32.

JOHN E. TALBERT'35 delivered a paper on the subject of "Centrifugal Compressors for High Pressure Ratios" before the fourth National Aircraft Propulsion meeting of the Institute of Aeronautical Sciences which was held in Cleveland, Ohio, on March 18. The paper was written jointly with John E. Sanders.

## *Willard H. Dow Killed in Crash*

WILLARD H. DOW, President of the Dow Chemical Company, and Mrs. Dow were killed in a plane crash on March 31 while on their way to Cambridge to attend the Mid-Century Convocation and Inauguration exercises at the Institute. In January, 1942, Dr. Compton announced the election of Dr. Dow to special term membership on the Institute Corporation for five years.

Dr. Dow was not only one of America's leading industrialists, but was long considered one of the foremost chemical experts in this country. He was awarded the Medal for the Advancement of Research by the American Society for Metals; a gold medal from the Society of Chemical Industry for conspicuous service to applied chemistry; and a gold medal from the magazine *Science* in recognition of his scientific contributions during the war years. Dr. Dow was a member of the American Chemical Society, the American Institute of Chemical Engineers, the Newcomen Society, the Deutsche Chemische Gesellschaft, and the Theta Delta Chi and Alpha Chi Sigma fraternities.

Dr. and Mrs. Dow are survived by a daughter, Mrs. Helen Dow Whiting of Midland, and a son, Herbert H. Dow, who is a student at the Institute.

## *Obituary*

JOSEPH A. DANE'75, in March, 1941.
HENRY W. HOLT'87, October 4, 1947.*
PHILIP M. HAMMETT'90, March 14.*
CHARLES W. RICKER'91, March 8.*
LAURENCE B. MANLEY'92, February 11.
FRANK S. BADGER'93, March 17.*
REID MCMANUS'95, November 11, 1948.
FRANKLIN BAKER, JR.,'97, May 30, 1946.*
JAMES L. FYFE'97, January 21.*
EDMUND S. MANSON'97, February 2.*
MARTIN BOYLE'98, February 25.*
JAMES F. MUHLIG'98, December 16, 1948.*
ALFRED W. HARRISON'99, June 4, 1947.*
HARRY H. MORTON'99, August 31, 1945.*
MARCY L. SPERRY'00, March 30.*
ASHER L. WEIL'01, February 24.*
WILLIAM R. DAVIS'03, November 22, 1948.
ZENAS N. MATTEOSSIAN'03, February 10.*
HENRY M. FLINN'04, in 1948.*
GEORGE C. NORTON'04, November 17, 1947.
GEORGE R. TAYLOR'07, January 17.
MARK E. KELLEY'09, February 2, 1948.*
PHILIP M. WENTWORTH'10, date unknown.*
THOMAS F. MCLAUGHLIN'11, March 1.*
FREDERIC R. BARKER'13, February 25, 1946.*
TENNEY L. DAVIS'13, January 25.*
CHARLES R. HILL'13, December 1, 1948.*
KENNETH D. KAHN'15, April 3.
JOSEPH LOW'18, January 6.
ROBERT W. VANKIRK, JR.,'18, February 12.*
AUGUSTIN C. TITUS'20, December 7, 1948.*
RICHARD DONOVAN'21, February 7.*
FRANCIS R. WHELTON'21, March 6, 1946.*
V. JOSEPH ALTIERI'23, February 10.*
GERALD M. NAUMAN'23, April 25, 1948.*
GEORGE C. WOLFE'23, May 20, 1948.*
GAILLARD HUNT, JR.,'27, March 5.
PETER WHITE'36, December 12, 1948.*
DAVID C. WHITAKER'39, March 10.

* *Mentioned in class notes.*

# *Alumni Day, Saturday, June 11, 1949*

# News from the Clubs and Classes

## CLUB NOTES

### *M.I.T. Club of Albany*

The Club met on March 1 at the Wellington Hotel for a dinner meeting with Charles F. Gosnell, Director of the New York State Library, as guest and speaker. The program included a tour through the library under the personal direction of Dr. Gosnell. The following members were present: A. F. Allen'12, R. F. Beers'28, F. R. Dallye'22, our President, F. S. Hungerford'24, C. J. McDonough, Jr.,'25, H. J. MacMillan'24, G. C. Myrick'25, Burt Rickards'99, our Honorary Secretary, G. W. Schaible'30, E. C. Schatz'23, C. E. Smart'05, S. L. Solar'41, Russell Suter'00, C. S. Webber'24, and W. A. Wilber'34. — George W. Schaible'30, *Secretary,* New York Telephone Company, 158 State Street, Albany, N.Y.

### *M.I.T. Club of Chicago*

By the time this issue of The Review goes to press, the Club will have enjoyed the outstanding event in its history, the Compton-Killian Dinner, April 14. At the time of writing this release, the committees on arrangements are hard at work setting up the various and sundry details required to insure a smooth and flawless functioning program. This dinner is scheduled to be held atop the Stevens Hotel in the beautiful facilities provided by the Tower Room overlooking Lake Michigan. We are expecting an outstanding turnout at this meeting. Minneapolis, Milwaukee, South Bend, and surrounding clubs in this area have expressed their desire to attend this extraordinary occasion. The tentative committees constitute the following: General Chairman, President Herb Kochs'24; Dinner Chairman, Jim Barker'07; Arrangements, Dick Meyer,3d, '42; Publicity, John Austin'36; Attendance, Bob Meissner'43. We shall give you the complete story on the dinner in the next issue.

There are some 1,100 Alumni now in the Chicago area. Of this number, over 360 are active in the Club. The Club Officers are: Herb W. Kochs'24, President; John W. Barriger,3d,'21, Vice-president; John G. Praetz'28, Secretary; F. Richard Meyer,3d,'42, Treasurer. — We extend a most cordial invitation to all Alumni in this area to attend our get-together meetings, occurring about once every two months, to become acquainted with our activities and the Alumni in this area.

Any of you Alumni in the Chicago Club area reading this, who are not presently on our Club mailing list, drop a line to Secretary John Praetz, whose address is shown below, giving your home address and business connection so that we may promptly add you to our mailing list. The Club publishes a very interesting and informative periodical, the *M.I.T. Club of Chicago Minutes,* following each meeting and this release is sent to the entire mailing list.

Let us hear from you and by all means come on over to the meetings, which are generally held at the Electric Club. The time and date are announced through general mailings to our mailing list prior to each meeting. — John G. Praetz'28, *Secretary,* The Liquid Carbonic Corporation, 3100 South Kedzie Avenue, Chicago 23, Ill.

### *M.I.T. Association of Cleveland*

Since our last news report of local alumni activity, there has not been a meeting other than an executive committee meeting, at which time preparations for the spring get-together were discussed. Larry Turnock'41, had previously been elected to the position of entertainment chairman and was now assisted by several alternate suggestions for the coming program. We have been successful in the past in having some interesting speakers, and from this meeting it was evident that the spring meeting may well be one of our best.

Several Alumni of Cleveland were planning on the trip to Cambridge for the Mid-Century Convocation; among them being: Kite Sessions'26, Al Gould'10, Dick Valentine'33 and Chuck Smith'42. We should have a fine firsthand report on the Convocation, and hope to have all Cleveland Alumni benefit by the remarks of those fortunate enough to go to the Institute. Others are arranging television or radio parties to hear the speakers. — We are proud to learn of the recent election of Hayden Kline'24, to the presidency of the Industrial Rayon Corporation. Hayden, with others, developed Industrial Rayon into one of the countries most successful companies. M.I.T. continues its splendid record in industry. — We believe that the Corporation of the Institute and its officers will be supported fully by Cleveland Alumni in the coming drive for financing the development of M.I.T. Many local meetings already have been held to launch our contribution. — G. Richard Young'37, *Secretary,* The Weatherhead Company, 300 East 131st Street, Cleveland 8, Ohio.

### *M.I.T. Club of the Connecticut Valley*

We have received from the Club Secretary a detailed report of the meeting on February 16. However, as the Alumni Secretary was one of the speakers at this meeting, we were fortunate in obtaining the news of the gathering in time to bring you a brief report in the April issue. For an outline of this meeting and the list of those in attendance, please see page iii of the April, 1949, issue.

President Minot Edwards'22 has appointed Bissell Alderman'35 to the executive committee to succeed Willard A. Emery'21, who has moved to Oklahoma. — Albert M. Lovenberg'16, *Secretary,* 66 Belmont Avenue, Springfield, Mass.

### *Detroit M.I.T. Association*

The Association held its monthly dinner meeting at Huyler's L'Aiglon Restaurant in the Fisher Building on March 8. Twenty-nine members were present to hear a talk by William L. Powlison, librarian for the Automobile Manufacturers Association. Mr. Powlison has spent 32 years in developing this library which has become the largest of its kind in the world, and is, therefore, well versed on the history of the automobile business. The Association is the outgrowth of several trade associations which were formed as early as 1900, at which time there were 24 original members, of which only one remains at the present day and that is Packard.

In 1912, the Automobile Manufacturers Association came into being, and for the first time all manufacturers became united in an association for their common good. The Ford Motor Company has never belonged to this Automobile Manufacturers Association, although the latter co-operates with Ford on request. The purposes of the Association are to further public relations, compile statistics, work for better highways, more favorable export regulations, more equitable taxes, and for the purposes of staging national automobile shows. The mechanical branch of the Automobile Manufacturers Association became the foundation for the present Society of Automotive Engineers.

Mr. Powlison discussed many of the early developments in the auto industry and pointed out such things as the use of a six-and-one-quarter-inch Dunlop tire and disc wheel in 1903 which was 20 years or so prior to the advent of the balloon tire, which was hailed as the first large tire ever to be used. An automatic transmission was developed and used by a Boston concern as early as 1904, and sometime later the Owen Magnetic car was produced with a variable speed transmission and was advertised as "the car of 1,000 speeds." An interesting incident with respect to W. C. Durant was brought out when Mr. Powlison stated that General Motors was formed in 1908 by Mr. Durant who then decided to buy up the Ford Motor Company. An agreement was finally made whereby the company would be bought for $10,000,000, of which $2,000,000 was to be immediately paid in cash. Upon going to his bankers, however, Mr. Durant failed to obtain the necessary $2,000,000, and the deal fell through.

President John Cronin informed us of the coming visit of approximately 20 for-

eign students studying at M.I.T. and stated that Chrysler, Ford and General Motors have arranged plant trips for this group so that they will be able to see a considerable amount of manufacturing and production activity in various phases of the automobile business.

Alumni present were: Charles Tuller'12; Frank Phelps and Howard Currier,'13; T. K. Hine'16; J. T. Cronin and Charles Ellis,'17; H. C. LeVine'18; Willis Bugbee '21; Charles Burnham'22; John Longyear, R. Gordon Spear and Dave Sutter,'26; Joseph S. Yates'27; H. F. Green'29; E. C. Beck'32; John Rumsey'33; Chesley Ayers, Ed Coe and Robert K. Roulston,'34; W. H. Bagley, Thomas F. Morrow and H. S. Young, Jr.,'35; William Coleman'46; Joseph C. Hobaica and Worth Percival,'47; Robert Cadieu, Edwin Hebb, Edward J. Hobaica and Warren H. Reid, Jr.,'48. — R. Gordon Spear, *Secretary,* Fisher Body Division, 10–253 General Motors Building, Detroit 2, Mich.

### *Indiana Association of the M.I.T.*

The Indiana stalwarts of M.I.T. convened on Monday, February 7, at the United States Naval Armory in Indianapolis to greet W. L. Campbell'15, Head of the Department of Food Technology. His up-to-the-minute information on Cambridge affairs seemed like a televised scene of Technology today, and his facts on food technology provoked a lively discussion after a diet-ignoring steak dinner.

The scheduled program for March 23 featured Dr. L. E. Burney, Commissioner of Public Health for Indiana. The present officers of the Association have been directing their efforts to increasing attendance at the monthly meetings by scheduling prominent speakers with interesting subjects. — Harry C. Karcher'25, *Secretary,* 320 West 43d Street, Indianapolis 8, Ind.

### *M.I.T. Association of Japan*

The first meeting of the year, held on January 18, was attended by 37 Alumni; which the Japanese members believe to be the greatest number of Alumni to attend any meeting here in Japan. The following American Alumni were present: Randall J. Hogan'22, Colonel; O. P. Winningstad '22, Colonel; Philip E. Gruber'25, Lieutenant Colonel; Urban Niblo'28, Brigadier General; Estanislao P. Angeles'32, Philippine Delegation; George T. Weed'32; Raymond O. Burzynski'33, Captain, U.S.N.; Mamerto Cruz, Jr.,'41, Philippine Delegation; George Yamashiro'42; Charles C. Buik, 3d,'45, Ensign; and Mrs. Charles C. Buik'45. The Japanese Alumni present were: Ryohei Arisaka'17, Ihei Sugimura '19, Juichiro Okada'20, Juntaro Kawai'21, Yoshinori Chatani'22, Kohei Kagami'22, Yoshio Kubota'23, Tamio Kashahara'24, Masaru Kametani'25, Chojiro Amano'28, Shikao Ikehara'28, Mimbu Sasaki'28, Takanao Kuki'29, Masaru Miyauchi'29, Minoru Nakano'29, Koichi Oye'30, John Kazuo Minami'31, Tsutomu Kamijo'34, Taichiro Hori'36, Thomas Kato'37, Yukio Otsuki'37, Yoshio Mikimoto'38, Ichiro Takahashi'38, and Shinko Kikegawa, special student.

Colonel Charles S. Stodter'24 and Major Turner W. Gilman'34 have been reassigned to Stateside duty. Lieutenant Colonel Hyman Weinberg'28 has been transferred to Kobe, Japan. As previously stated, Bedrich V. Hettich'43 has returned Stateside. — After the usual toasts and greetings we enjoyed a Japanese dinner. For the information of Alumni who have been to Japan, the following are some items that were served: baked fish, tempura, and sukiyaki cooked over charcoal brazier.

The Japanese members are very much interested in getting some of the more promising students into M.I.T. As you know, before a Japanese student can go to the States he must have someone in the States to sponsor him and to guarantee his expenses. It is my personal opinion that it is highly essential that as many young people from Japan be given a chance to study in the States and to see at first hand how a democratic people conduct their own lives and government. It is one thing for them to read and to study about democracy but it is quite another story for them to be able to really understand and to picture democracy in action. If there is anyone in the position to, or who would like to sponsor a worthy Japanese student, please let me know.

Although General Niblo had but a few minutes with us, he mentioned that there must be at least 50 members of the army in the Tokyo area who had taken courses at Technology and who might be interested in getting together. — At the conclusion of the evening Mr. Angeles offered to let us have the next meeting at the Philippine Embassy. — John Kazuo Minami'31, *Secretary,* Edogawa Apt. Shinogawa-Machi, Ushigome, Yodobashi-ku, Tokyo, Japan. George Yamashiro'42, *Associate Secretary,* ESS-GHQ-SCAP, A.P.O. 500, San Francisco, Calif.

### *The M.I.T. Club of the Kanawha Valley*

The Rose Room of the Hotel Ruffner, Charleston, W.Va., was the locale of a stein-on-the-table party of the Club on April 4. With President Joseph C. Jefferds, Jr.,'40 presiding, the main order of business was the election of officers. The new Prexy is Benjamin T. Woodruff'36. Entertainment included the moving pictures, "M.I.T. in 1948" and "The Co-Axial Cable." The latter film was loaned by the C. and P. Telephone Company through the efforts of Ray M. Durrett'29. Malcolm M. Anderson'42 was at the sound projector. — Daniel G. Hulett'42, *Secretary,* 1595½ Quarrier Street, Charleston 1, W.Va.

### *The M.I.T. Club of the Lehigh Valley*

At the March 1 meeting held in Bethlehem, Pa., this Club sponsored the first of a series of meetings to be devoted to the industries of the Lehigh Valley. The New Jersey Zinc Company, a leader in technological advancement in its field, was chosen as the first guest company to sound the keynote for these programs. Lindsay Johnson, assistant manager, and Howard Cyr'18 of the technical department, presented a sparkling program centered on the policies and products of this nationally famous company.

President Flynn'19 appointed a nominating committee to prepare a slate of officers to be elected at the annual meeting to be held in Palmerton, Pa., at the end of May. The committee, headed by H. Moggio'28, has submitted the following slate to be voted on at the annual meeting: For President, L. A. Wilson'14; for Vice-president, G. Farnell'41; for executive committee (3), E. J. Ingram'25, H. Moggio'28 and J. F. Libsch'40.

The executive committee has voted to increase the number of committee members from seven to ten in order to spread club interest and responsibilities. To carry out this proposal it will be necessary to revise Article V of the constitution. At the annual meeting, this matter will be discussed and, if voted upon favorably, three additional executive committee members shall be elected. — Michael V. Herasimchuk,'39, *Secretary,* Post Office Box 495, Bethlehem, Pa.

### *M.I.T. Club of Monterrey*

Our Club President furnishes us with the following news. Meetings of the Club were held February 22 and 28, and another took place on April 22 with Juan Garza-Lafón'12 in charge.

On February 22, when Ramón F. Muñoz'09 acquainted those present with the M.I.T. Development Program, in which all were interested and hoped to participate, there was a 100 per cent attendance: Alberto P. González'01, Eugenio Garza-Sada'14, Bernardo Elosúa'23, Roger E. Valentine'23, Frank M. Corliss '25, Leonardo Siller'29, Camilo G. Sada '32, Julio de la Fuente'33, Rodolofo J. González'34, N. Bruce Duffett'40, Eliot Camarena'44, Salmon Juan Celada'44, F. Manuel R. Llaguno'46, Xavier Sada-Narro '47, Hernán Rocha'48, Rodolfo F. Barrera '49, and Raúl Sada-Rangel'49, in addition to Garza-Lafón and Muñoz.

H. E. Lobdell'17, Executive Vice-president of the Alumni Association, was the guest of honor February 28 at a dinner at the *Instituto Tecnológico y de Estudios Superiores* attended by all M.I.T. Alumni in Monterrey, as well as the most prominent persons of Monterrey industrial and banking activities. Lic. Roberto Guajardo Suárez, director of the *Instituto,* praised the achievements of M.I.T. and expressed the wish that the ITESM in Monterrey would continue to follow its lead. Mr. Lobdell, in turn, complimented Lic. Suárez upon the progress made by the *Instituto* since its establishment in 1943 under the sponsorship of Eugenio Garza-Sada'14, who succeeded in obtaining the co-operation of all industries of Monterrey to found it. There were about 50 at the dinner, and afterward 100-odd students of the *Instituto* joined the group for a showing of the film "M.I.T. in 1948." — Bernardo Elosua'23, *Secretary,* Box 360 Monterrey, N.L., Mexico.

### *M.I.T. Club of Milwaukee*

William L. Campbell'15, Head of the Department of Food Technology, was chief speaker at a dinner meeting of the Club at the University Club on February 9. Professor Campbell is executive director of the M.I.T. Development Program and gave an interesting and educational talk instructing those present on how they could assist this program. — CHARLES L. SOLLENBERGER'44, *Secretary,* 7260 West Center Street, Milwaukee, Wis.

### *The M.I.T. Club of New York*

As we go to press this time, all of us are looking forward keenly to the Mid-Century Convocation and Inauguration which takes place in Cambridge on March 31, April 1 and 2. It will, of course, be history by the time you read these notes but there will be a tremendous delegation on hand from the M.I.T. Club of New York.

During March, I ran across Ed Dunlaevy'24, who has been made a vice-president of Phelps Dodge and elected a trustee of the New York Savings Bank; and Paul Keyser'29 who is now manager of industrial lubricants for Socony-Vacuum Oil Company at 26 Broadway. Paul is doing much traveling and after spending a month in Europe on company business is now on the West Coast for similar purposes. Bob Johnson'23 has been made sales manager of the Cities Service Oil Company at 70 Pine Street, and Maurice Davier'27 has been made vice-president and general manager of Van Cleef division of Johns-Manville. Mike is spending most of his time in Chicago but resides in Darien. Fred Hungerford'24, in town the other day, announced that he is now air conditioning engineer for the state of New York with headquarters in Albany. At a gathering in Pret Littlefield's home, your correspondent enjoyed spending time with Mike Davier'27, Dwight Luster'26, Sam Tinsley'25 and B. Cushman'24.

Harvey Kram'42 is about our most active "membership getter" having brought in no less than 15 of his classmates. Word from Doc Duff seems to indicate that he is his same old usual self and getting a tremendous kick out of life. Doc likes to be kept in touch with each of his friends so I suggest that you sit down and drop him a note at Hammond Hall, Gloucester, Mass. The following new members have joined the Club: George J. Leness'26, Merrill Lynch Pierce Fenner and Beane, 70 Pine Street, New York 5, N.Y.; John W. Hunter'47, 68 Woods Avenue, Malverne, L.I., N.Y.; and Allen Addicks'21, 32 Wimbleton Lane, Great Neck, N.Y.

We regret to announce the passing of Charles A. Mace'01 on January 3 and Colby W. Bryden'22 on January 11. — WILLIAM W. QUARLES'24, *Secretary,* 330 West 42d Street, New York 18, N.Y.

### *Niagara Falls M.I.T. Club*

Dean T. K. Sherwood addressed the Club on Friday, March 18, at our dinner meeting. He informed the group of recent changes at the Institute and those in the offing. Our next meeting is planned as a Ladies' Night and will take place during the month of May.

Those in attendance were: Arnold Arch'40, D. W. Barber'42, L. F. Cavendish, Jr.,'38, W. T. Dunlap, Jr.,'22, E. R. Dytko'47, E. C. Forbes'41, M. B. Geiger '28, E. L. Hauman'16, W. H. Hope, Jr., '36, A. W. Hosig'23, E. D. Kane'47, R. A. Montgomery'19, C. N. Richardson'16, A. A. Sargent, Jr.,'39, J. J. Seaman'35, G. D. Shingleton'49, C. S. Taft'44, H. H. White'47, L. M. White'12. — EDWARD D. KANE'47, *Secretary,* Ontario Paper Company, Ltd., Thorold, Ontario, Canada.

### *M.I.T. Club of Philadelphia*

This year marks the 52d anniversary of the Club. Through the years a gradual transition has been made from small weekly luncheons to the present large dinner meetings which attract as many as 200 Alumni and guests. The Club's growth, lately, has averaged 10 per cent annually with the present membership totaling 335 active members drawn from 1,400 Alumni residing in the Philadelphia-Wilmington area which comprises adjacent parts of southern New Jersey, southeastern Pennsylvania, and northeastern Delaware.

The Club's activities are centered about three scheduled dinner meetings a year held on the third Tuesdays of October, January, and May, when from 100 to 200 Alumni gather for good fellowship and hear distinguished speakers. Occasionally, an informal affair such as a beer party, picnic, or deep-sea fishing party is arranged. The Club publishes a membership directory which lists active members alphabetically, by classes, and by companies.

Recent speakers at club functions have been George E. Whitwell'14, Vice-president, Philadelphia Electric Company; William L. Batt, President, SKF Industries, Inc.; William S. Newell'99, President, Bath Iron Works Corporation; C. George Dandrow'22, President, M.I.T. Alumni Association and Vice-president, Johns-Manville Corporation; and Herbert W. Anderson'15, President, Haskell-Dawes Machine Company and Vice-president, H. Brinton Company.

The Warwick Hotel ballroom was the very attractive setting for the annual meeting held on Tuesday, January 18, 1949. Karl T. Compton, Chairman of the Research and Development Board of the National Military Establishment and Chairman of the M.I.T. Corporation, and James R. Killian, Jr.,'26, President of M.I.T., spoke to the assembled Alumni, their wives, and their guests. Mrs. Compton and Mrs. Killian were guests of honor at this first meeting in many years to which the ladies were invited. Response to this meeting has been so enthusiastic that plans are being made for another Ladies' Night at the annual meeting in January, 1950. Elections are part of every annual meeting; and elected to serve one year were: President: Robert E. Worden'36; First Vice-president: Charles W. Stose'22; Second Vice-president: Robert M. Harbeck'28; Third Vice-president: Robert L. Hershey'23; Secretary: Samuel K. McCauley'41; Assistant Secretaries: Wiley F. Corl, Jr.,'39 and William H. Peirce'46; Treasurer: Frank S. Chaplin'32; Assistant Treasurer: William H. Bertolet,3d,'48; Executive Committee: James McGowan, Jr.,'08, Henry S. Dimmick'22, William H. MacCallum'24, John Lawrence'32, Proctor Wetherill'34, James S. Thornton'41, Daniel J. Horan'48.

The spring meeting will be held in the duBarry Room of the Hotel duPont, Wilmington, on May 17, at 7:00 P.M. All Alumni are cordially invited to bring their guests to hear the distinguished speakers at this dinner meeting. Details will be mailed to club members on or about May 1. Others may contact the Secretary for reservations. (P.S. We are pleased to announce that the speakers at the spring meeting will be H. E. Lobdell'17, Executive Vice-president of the M.I.T. Alumni Association, Crawford H. Greenewalt'22, President of E. I. duPont de Nemours and Company, and Carroll L. Wilson'32, General Manager of the United States Atomic Energy Commission.)

For information about Alumni in the Philadelphia-Wilmington area, telephone Boulevard 0287. — SAMUEL K. MCCAULEY '41, *Secretary,* 288 Copley Road, Upper Darby, Pa. *Assistant Secretaries:* WILEY F. CORL, JR.,'39, Box 358, Bryn Mawr, Pa. WILLIAM H. PEIRCE'46, 532 East Mermaid Lane, Chestnut Hill, Philadelphia 18, Pa.

### *The M.I.T. Club of the Philippines*

After a lull of several months brought about by the Christmas holidays, the Club held its first activity of the year with a Manila Bay cruise and a land trip around the island fortress of Corregidor of World War II fame. This rare and unusual trip was made possible through the help of Jerre Spurr'27, a lieutenant colonel, U.S.A., who supplied the launch used by the party. Leaving early on the morning of February 20, the Club first made a detour to inspect the construction of piers 9 and 13, two of the longest piers in the Orient that were completely demolished by the Japanese. Lieutenant Colonel Spurr gave a short talk about the construction details of these piers. The group then proceeded to Corregidor viewing the remains of sunken Japanese warships and other vessels neatly piled inside the breakwater. A brisk luncheon, renewal of friendship ties among former associates of the old school and recollections of old times livened the seemingly short three-hour trip to Corregidor.

The party was conducted to the famous Malinta Tunnel, refuge of the defenders of the island fortress, now utterly deserted except for the handful of army guards that patrol the place. Motoring up the winding roads studded on both sides by Ipil trees, the group finally reached the top where an old Spanish lighthouse stood. Climbing the steps of the lighthouse, a most magnificent view was had by the party of the war-torn island now thick with shrubbery and vegetation. On the descent, the group inspected one of the cannon mortars used in the defense of the island. Returning to the launch, the group proceeded to "White Beach" in Bataan, so-called because of the pure lily-white sands that line the beach. The "swimming team" of the Club, com-

posed of Lieutenant Colonel Jerre L. Spurr '27, Virgilio Uyenco'48 and Ramon S. Sevilla'39, displayed their aquatic abilities. On the return trip, the affair was climaxed by a jolly, though somewhat vociferous, meeting in which Lieutenant Colonel Spurr was unanimously elected to succeed Gregorio Zara'26, outgoing Beaver, and suggestions were made by various members on how to strengthen the club ties by increased meetings and similar activities.

Technology men who enjoyed the outing included the following: Ramon Abarquez'23, Ciriaco Coronel'31, Tomas de los Reyes'39, Emilio del Prado'24, Jose Espinosa'22, Krause Ignacio'43, Jose U. Jovellanos'43, Antonio C. Kayanan'42, Manuel Liwanag'27, Ernesto Mendoza'40, A. P. Moyano'28, Felix Padilla'30, Jesus Perlas'39, Ramon S. Sevilla'39, Rafael Simpao'40, Jerre L. Spurr'27, Juan T. Villanueva'26, Herbert Walker'02, Virgilio Uyenco'48, and Gregorio Zara'26. — RAMON S. SEVILLA'39, *Secretary*, 2841 Taft Avenue, Rizal City, Philippines.

### *The M.I.T. Club of Rochester*

The following notes are a brief summary of the club's activities from the meeting and picnic in October through the annual spring dance, which was held on March 19. On October 2, the Club had its annual meeting and picnic at Mendon Ponds Park. Harold H. Leary'23, President of Leary's Cleaners and Dyers, Inc., was chosen president of the Rochester Club by unanimous vote. Henry Couch'20 of Eastman Kodak Company and Collin H. Alexander'39 of Bausch and Lomb Optical Company were chosen 1st and 2d vice-presidents, respectively. Alfred E. Castle'40 was elected treasurer and Charles F. Payne'33 was elected to the executive committee for a three-year term. Frederick J. Kolb, Jr.,'38 was re-elected secretary. Continuing to serve on the executive committee are Frederick J. Hopkinson'20, whose term expires in 1949, and Howard F. Carver'32, whose term expires in 1950. — Dwight VandeVate'22, Honorary Secretary for the Rochester area and Chairman of the club's scholarship committee, announced the award during the summer of aid from the Rochester scholarship fund to Alfred C. Haacke and J. Bernard Cott. At this time, in addition to the M.I.T. club scholarship there will be an alumni regional scholarship for the Rochester area.

Administrative changes at the Institute as seen by a Corporation member were reported by Edward S. Farrow'20, Alumni term member, to the Club on November 23. Economic recovery of Greece was discussed by Herbert P. Lansdale, as the second feature of the meeting.

Twenty-one members of the Technology student body, whose homes are in the Rochester area, joined with Avery A. Ashdown'24, Associate Professor of Organic Chemistry at the Institute, and 42 members of the Club, at the annual Christmas luncheon on December 28. Raymond M. Haak'51, Jerry M. Howell'49, and Alfred O. Ginkel, graduate student, reported to the club members on how the Institute looks these days through a student's eyes. Professor Ashdown then summarized the changes of the past year, taking the members on an imaginary tour of the Institute grounds.

Some aspects of chemistry and color photography were discussed by Cyril J. Staud'24, Director of the Kodak Research Laboratory, with the Club on February 2.

Soft lights and sweet music in the lounge, the ripple of conversation in the parlor, and the sparkle of wit in the bar, provided an undercurrent for the annual spring dance of the Club on March 19. Twenty-seven couples danced to recorded music of unsurpassed quality, arranged and provided by Lee McCanne'27. A Chatterbox Club dinner started the evening, while before and during dancing members and guests were enthralled by a discussion of the various systems of recorded music. Intermission entertainment was provided by the Dodd Singers' first edition recording of the M.I.T. songs. Arrangements for the party were made by Vice-president Collin H. Alexander'39, assisted by Albert E. Bakker'43 and Lee McCanne'27.

The following members were present at what was voted the outstanding social event of the year: Collin H. Alexander'39; Albert E. Bakker'43; Robert G. Bowie'38; Albert E. Castle'40; William F. Coombs, Jr.,'47; J. Nelson Cooper'30; Henry R. Couch'20; Webster E. Fisher'30; John R. Green'46; Reynold A. Grammer, Jr.,'47; William F. Halbleib'48; Alexander F. Hamilton'35; Arthur S. Hamilton, Jr.,'35; William N. Hosley'48; Henry P. Kehrer '44; Frederick J. Kolb, Jr.,'38; Harold H. Leary'23; Emery M. Low'29; Lee McCanne'27; William O. O'Neill'43; Charles F. Payne'33; William A. Pitbladdo'31; James C. Reddig'29; David Richardson '37; Paul W. Stevens'37; Elmer H. Stotz '32; and George R. Struck'34. — FREDERICK J. KOLB, JR.,'38, *Secretary*, Building 14, Kodak Park, Rochester 4, N.Y.

### *M.I.T. Club of St. Louis*

Harold F. Howe, a regional director of the Development Program, and Professor William L. Campbell'15 of the Institute, were in St. Louis on January 19. They met for dinner with members of the Committee on Financing Development and the Board of Governors to help the Club start its part of the program. Considerable enthusiasm for the program was shown at the meeting.

A new directory of St. Louis Alumni is planned for this spring. Ellis Littmann'33 has put much time and effort into gathering information to bring the club lists up to date. The directory will be printed and distributed soon. — JAMES R. CASSERLY '43, *Secretary*, 6136 McPherson Avenue, St. Louis, Mo.

### *M.I.T. Club of Schenectady*

The Club held a luncheon meeting at the Young Women's Christian Association on Thursday, March 17. Ben Thorn'41 of the Turbine Sales division of General Electric arranged a showing of "Power by Which We Live," an excellent moving picture showing scenes of the manufacture of turbine-generators and of the applications to which they are put. After the movie, Ben answered a number of questions raised by the group. Present were: J. B. Taylor'97, P. L. Alger'15, V. Y. Dunbar'16, E. H. Bancker'18, F. F. Buckland '20, H. H. Zornig'23, B. S. Weaver'25, G. R. Copeland'27, B. G. Hastings'30, C. F. Barrett, Jr.,'34, L. H. Dee'35, Shepard Roberts'38, Harold Chestnut'39, D. C. Jackson,3d,'40, I. W. Collins'41, J. S. Quill '41, R. W. Stanhouse'41, B. C. Thorn'41, R. W. Austin'42, E. B. Judd'42, L. I. Kramer'43, W. B. Rodeman'44, A. M. Varner'47, N. M. Bengtson'48, and Francis Brown, Jr.,'48.

A. J. Tacy'27, a past president of the Club, has recently been made assistant manager of the Market Research division in the General Electric executive department. Mr. Tacy has been with G.E. since graduation, serving during the War as secretary and later as chairman of the company's priorities committee, and since the War, he has been with the Electric Utility division, where he has been responsible for sales to electric light and power companies in the New York, New England, Pacific, and Northwest districts. — IVOR W. COLLINS'41, *Secretary*, General Electric Company, Building 60 Annex, Schenectady 5, N.Y.

### *M.I.T. Club of Shanghai*

Of eight meetings held during 1948, one had a maximum attendance of 115 members and guests, and the average turnout was about 40. The first of these gatherings was on April 12, when the Shanghai Power Company, under the auspices of its president, Paul S. Hopkins'10, held "Open House" at its Riverside Steam Electric Generating station. The program featured a tour of this 2,000-kilowatt plant, an excellent dinner, and discussions by company officials of the problems involved in supplying about 87 per cent of the electric power consumed in Shanghai.

About 80 accepted Admiral P. T. Mar's ('15) invitation on May 16, to inspect the Kiangnan Dockyard of which he is director. The Kiangnan Dockyard's staff includes a number of officers trained at M.I.T., and on this occasion they acted as hosts and conducted their colleagues through the premises. This is the best equipped and largest dockyard in the Far East, and many of those present had the additional chance to enjoy a half-day cruise on the Whangpoo River by special launch.

On June 19, a joint M.I.T.–Harvard social was held, which function, resumed since V-J day, has grown to be an annual tradition. The afternoon garden party, open to members of both alumni clubs, attracted 215 people, of which 114 were M.I.T. members. Roger Lapham, of Harvard, then the newly arrived Director of Economic Co-operation Administration in China, was the speaker.

Perhaps the most memorable and pleasant evening of the year was on August 20, when Waken Chang'28, general manager of the Shanghai City Ferry Company, sponsored a moonlight cruise for the Club. Members and their families, totalling 105, boarded a specially chartered ferry boat at 8 P.M. With the help of a five-piece swing band and plenty of good food and

drink, all supplied by the host, the dinner dance got under way, interspersed with a variety musical program rendered by several guests. The boat sailed leisurely down the Whangpoo, returning at midnight.

Beginning in September, political and economic developments in China became overwhelmingly drastic and unpredictable, yet the Club continued to hold regular meetings despite many difficulties. During the last meeting of 1948, on December 19, officers for 1949 were elected as follows: Teh-ching Li'37, President; Vincent S. Hyui'37, Secretary-Treasurer; and Chia-ching Tu'32, Assistant Secretary-Treasurer. Could it be more than a coincidence that all of these officers are now working with the Shanghai Power Company?

Our first meeting of 1949, on January 23, was at the Chinese Country Club in the western suburb of Shanghai. The weather was unusually mild and sunny for January; the turnout of 50 members and eight guests was one of the biggest in many moons. Hosts for the meeting were: Ki Chun'20, T. C. Hsi'15, M. S. Hsu'38, V. S. Hyui'37, S. M. Lee'19, T. C. Li'37, C. C. Tu'32, and T. F. Wei'20. After luncheon a short talk was made by T. P. Hou'17, on his recent visit to the United States, during which he attended the dinner of the M.I.T. Club of New York at the Biltmore on December 7.

The second 1949 meeting, on March 3, honored Y. C. Mei, President of Tsinghua University, recently evacuated from Peking. Dr. Mei reported on the difficulties experienced by educational institutions under the present unsettled political situation, and expressed the opinion that in addition to the "Four Freedoms" advocated by the late President Roosevelt, there should be . . . a "Freedom of Silence" whereby people choosing to remain inactive might not be forced to make false declarations in favor of one political faction or another.

In line with practically all clubs and societies in Shanghai, to cope with the supersonic speed of inflation in China our dues are collected in terms of a basic dollar multiplied by the Cost of Living Index. It may be of interest to know that the Index at this moment (March 15, 1949) stands at 1,339 times the cost level of seven months ago (August 19, 1948), at which time the Index was already 3,630,000 times prewar. In other words, the present cost of living, according to officially released figures, is about 4,850,000,000 times the figure for 1937!

Quite a few of our members have recently left Shanghai, but we still have 165 Alumni on our local mailing list, and about 90 of these are active. We expect to hold a total of eight meetings during the year for, while we don't know what the future has in store for us, we plan to carry on. — VINCENT S. HYUI'37, *Secretary,* in care of Transport Division, Shanghai Power Company, 375 Kowloon Road, Shanghai, China.

## *M.I.T. Club of Southern Texas*

Congratulations and cordial good wishes for this and each of the years ahead are by this means extended to James Rhyne Killian, Jr.,'26, from all the Alumni of Southern Texas.

H. E. Lobdell'17, Executive Vice-president of The Alumni Association, gave us the pleasure of a four-day visit from February 20 and was guest of honor at a dinner on the evening of February 22. In the absence of the Secretary, who was in Mexico, J. E. Lewis, Jr.,'47 as "unofficial historian" reported as follows: "The proceedings at this informal meeting do not warrant a detailed description and only one point needs to be acknowledged officially. This concerns a motion which was approved without a dissenting vote by the 59 Alumni in attendance. I. W. Alcorn'23 is to be chairman of a committee which will present recommendations to govern the establishment of a more formal alumni organization in Houston. His committee is composed of Tom Jenkins'32, Duke Selig'33, and Dick Lyons'17, of Houston, George B. Morgan'20, of Beaumont, and unnamed representatives from Texas City and Galveston. No date was set for the presentation of this committee's report.

Guests for the evening included, in addition to Mr. Lobdell, William V. Houston, President of Rice Institute and Clark Goodman'40, Associate Professor of the M.I.T. Department of Physics. Mr. Lobdell was introduced with appropriate remarks by Dick Lyons. A film titled "M.I.T. in 1948" was then shown after a brief introduction by Lobbie; and, following this, he answered questions from the floor."

It is expected that the committee headed by Irwin W. Alcorn'23, will, in due course, have most favorable results; and it may be that a preliminary report of its findings can be had sometime in April. About April 22, we shall have an opportunity to meet and reminisce with our good friend, Horace S. Ford, Treasurer of M.I.T., provided, of course, that he and Mrs. Ford have included Houston in their itinerary. — JOSEPH H. MCEVOY'21, *Secretary,* 202 McGowen Avenue, Houston 6, Texas.

## *The M.I.T. Club of Tulsa*

The regular monthly luncheon meeting at Smith's Restaurant on March 2 was attended by 17 members. At that time the Club voted to hold an extra luncheon meeting on April 29 so as to take advantage of Horace S. Ford's visit to this area and get some firsthand information on Technology affairs. The annual meeting, including election of officers, will be held at the home of Bill Sherry'21 sometime in May. The Club was quick to accept Bill's gracious invitation and all members will be notified in advance as soon as a definite date can be announced. The following Alumni have been added to the Tulsa Roster in the past year: B. W. Birmingham'48, R. R. Chase'39, Jess E. Dew'48, Willard A. Emery'21, Curtis S. Green'48, John W. Hawkins'48, Whitney Newton'43, C. F. Neely'48, S. E. Penner '45, G. V. Rohleder'48. — WALTER S. SMITH'30, *Secretary,* 410 McBirney Building, Tulsa 3, Okla.

## *M.I.T. Club of the University of Illinois*

The Club congratulates President Jim Killian and wishes him the fullest measure of success. Although inactive through the war years, the Club is resuming its occasional luncheon meetings. — ALAN K. LAING'26, *Secretary,* Department of Architecture, University of Illinois, Urbana, Ill.

## *Washington Society of the M.I.T.*

On March 2, Arnold O. Babb, chief of programs division, Office of Programs and Finance, Bureau of Reclamation, addressed the Society in Barker Hall. Water is a controlling factor in the development of the West, stated Mr. Babb, and the Bureau of Reclamation is making long-range plans to provide that water. While 5,000,000 acres of land are now under irrigation within the United States, plans over the next seven years include doubling this area. Once the cause of widespread devastation, the western rivers are becoming sources of food-growing water, as well as by-product power.

Early settlers began reclamation in Salt Lake City when they built the first modern irrigation system in 1847, and the government entered the picture in 1902 when the attention of Theodore Roosevelt was called to the critical need for water in the western states. The reclamation fund then established was used for projects designed to be self-liquidating since the water was paid for by the users. Sale of public lands, mineral rights, power from dams and irrigation water are now the sources of income for the reclamation fund. Projects of tremendous magnitude built during the past 15 years, however, have required funds far in excess of the accumulated reclamation fund. Projects such as Grand Coulee, Hoover Dam and Shasta Dam, with their hundreds of miles of canals and millions of kilowatts, will also be self-liquidating over a long term. After the lecture, slides and an impressive movie of the construction of Hoover Dam were shown.

Present were: C. K. Allen'17, G. L. Arnold'30, H. M. Baxter'17, A. E. Beitzell '28, A. F. Bird'30, M. E. Brown'43, Zelda Carof'43, S. J. Cole'26, F. H. Copeland '18, J. G. Crane'90, J. A. Furer'05, Mary Goldwater'38, J. E. Harper, Jr.,'32, R. M. Hartley'45, H. D. Hoffman'27, A. M. Holcombe'04, Myer Kessler'39, Ben E. Lindsly'05, Richard McKay'21, W. K. MacMahon'22, G. E. Marsh'02, W. H. Martin'11, F. C. Meltzer'28, G. D. Mock '28, J. Nolen, Jr.,'20, J. A. Plugge'29, F. S. Pohanka, Jr.,'44, R. F. Seedlock'40, J. W. Sheetz'42, M. O. Soroka'26, G. W. Stone '89, R. K. Thulman'22, F. P. Upton'16, and H. E. Weihmiller'25. — ALBERT F. BIRD '30, Review *Secretary,* 5070 Temple Hills Road, Southeast, Washington 20, D.C.

## *The M.I.T. Club of Western Pennsylvania*

The fifth meeting for the 1948-1949 season of the Club was held at the University Club in Pittsburgh on January 20, 1949. We kept posted on television news

by hearing M. T. Uleman of the Pittsburgh Plate Glass Company in a non-technical discussion entitled, "Television, 1817 to 1949." – The sixth meeting of the year was held at the University Club on February 17. Sigmund Hammer of the Gulf Research and Development Company and the University of Pittsburgh answered the question of how much longer we can expect to run our cars on gasoline, in his talk, "Geophysical Prospecting for Oil." – The seventh meeting of the year was held at the University Club on March 17. After the usual excellent buffet supper, we heard Albert N. Tarulis, Professor of modern languages at Carnegie Institute of Technology, discuss with us "The Independence of the Small European Nations." Dr. Tarulis has had a most interesting experience, having been born and educated in Lithuania and having served in top Lithuanian government agencies. During the War, he witnessed both the Russian and German occupations of his native country, and was a German slave laborer.

Those in attendance at either one or all of the meetings were: G. A. Morrison'09, R. G. Lafean'19, E. M. Barnes'23, L. E. Carlsmith'23, E. L. Chappell'24, J. E. Frazier'24, George Riegl'24, L. H. Bailey '25, H. C. Hoar'25, R. N. Palmer'25, W. M. Davidson'26, William Goodridge '26, M. M. Greer'26, P. W. Robinson'26, C. T. Barker'27, W. H. Reed'27, D. W. Dimock'28, R. D. Hoak'28, G. M. Hoffman'28, B. M. Hutchins'32, S. D. Miller '32, A. H. Orr, Jr.,'32, Henry Rockwood '32, J. L. Thistle'32, C. H. Mohr'33, A. K. Redcay'34, W. J. Bates'35, P. S. Vincent '36, F. L. Current'37, P. R. Toolin'39, W. K. Bodger'40, T. F. Reed'40, C. F. Peck, Jr.,'41, C. D. Robson'41, C. N. Cresap'42, F. J. Fleischauer'42, R. H. Horsburgh, Jr.,'44, Ralph Kerrigan'45, W. F. Limbach'45, P. M. Miller,2d,'46, James Haggett'47, D. W. Hoffman'47, Stanley Kasper'48, W. C. King'48, W. F. Schaefer'48, R. G. Schmidt'48, W. W. Simpson'48, P. B. Coxe, guest, G. C. Hein, guest, F. O. Mortlock, guest. – THOMAS F. REED'40, *Secretary*, 232 Maybrick Avenue, Pittsburgh 16, Pa.

# CLASS NOTES

## • 1873 •

We are delighted to have a letter from George M. Tompson, Secretary of the Class. Mr. Tompson, the only living member of the Class, resides at the Masonic Home in Charlton, Mass. He is looking forward with great interest to reading the account of the convocation and inauguration exercises at the Institute.

## • 1877 •

We are very pleased to have word from the President of the Class for this issue of The Review. He reports that activities have ceased as there are now only two members of the Class: Frank I. Sherman, born in 1854, and the President, born in 1855. We learn that Mr. Sherman is confined to his room. The President is in good health and with the aid of a cane goes to Boston and Cambridge every week. – WILLIAM H. BEECHING, *President*, 106 Bellevue Avenue, Winthrop, Mass.

## • 1882 •

We regret that no information was received concerning the Class in time for publication in The Review. – RACHEL P. SNOW, *Acting Secretary*, 4 Pond Road, Falmouth, Mass.

## • 1883 •

Unfortunately, we were unable to obtain notes relative to the Class at the time of publication. – HORACE B. GALE, *Acting Secretary*, 10 Highland Street, Natick, Mass.

## • 1884 •

The Secretary urges all classmates who are able to do so to attend the luncheon in Du Pont Court on Alumni Day, June 11. Although some members of the Class may find it impossible to attend the evening affairs, it is hoped that there will be a grand turnout of '84 men at the luncheon in celebration of our 65th anniversary. – SAMUEL S. DEARBORN, *Secretary*, 6 Newport Road, Cambridge 40, Mass.

## • 1885 •

I regret that absence from home prevented my sending in for the May issue of The Review, a *full* account of our classmates, for several of them attained distinction. I have some hesitancy in naming them for fear that I may omit someone, but the following have come to my notice: Charles R. Allen, David Baker, Frederick Fox, Hammond V. Hayes, Isaac W. Litchfield, Arthur D. Little, Richard S. Lull, Tracy Lyon, Alexander R. McKim, Hugh MacRae, Professor A. L. Merrill, Everett Morss, Frederick H. Newell, Louis E. Reber, Professor Henry P. Talbot. All but Lull and MacRae have passed away. Dr. Allen can be considered the Father of Vocational Training; Dr. Little the Father of Industrial Chemistry; and Frederick H. Newell the Father of Irrigation.

Eighteen eighty-five was the first class to graduate electrical engineers. – On the present grounds the Class planted a tree, and a flag pole was donated by one member, which was towed all the way from Oregon. – ARTHUR K. HUNT, *Secretary*, Longwood Towers, Brookline 46, Mass.

## • 1886 •

Replies to my second $1.00 assessment levied on the members of the Class of '86 M.I.T. and '86 S.M.A. (who come together under the protecting arms of the Alumni Association) are being received, and up to the date of March 21, I have heard from 9 members of the M.I.T. group and 4 members of the S.M.A. group. By asking for such a large (?) amount I am raising a question in the mind of at least one member who wonders if I ought not to be bonded! Of course, it would be improper to mention any names, but if Bill Campbell of Wollaston is looking for a commission, I fear he will be disappointed. Some of the replies are from less suspicious individuals who have already paid their first assessment but who send $2.00 and ask me to keep the change. Fred Mackintosh must be rolling in wealth, for he sends me $3.00 with his best wishes. He says he will be 85 in a few days. He is still active and interested in many things while his son, Donald C., carries on in the department he used to (try to*) fill. *(This depreciatory parenthesis is added by the Secretary!) Ingalls sends his dues and asks to be informed when more is needed. In answer to my request for information as to his present interests he says that he retired from professional practice at the end of 1947, but finds much to occupy him in historical research; is especially interested in a project for restoration of the Iron Works on the Saugus River which operated between 1645 and '60, and from bog iron ore provided the Bay Colony with castings, wrought-iron products and even with cut nails. These were the first producing iron works in the United States. Excavations revealing old foundations and so forth were begun in the latter part of 1948 and will be resumed in 1949. He writes from Ingoldsby, Boxford, Mass., or at least that is on his letterhead. Duff wrote me in February and did what I wish other members would do; namely, sent me material for an obituary to be available when needed. With his permission I am turning the material over to the Alumni Office as I think it likely he may outlive me. If other members of '86 care to write up what they would like to have printed in such a notice, I will see that the Alumni Office has it on file. Don't be too modest.

W. F. Jordan sends his assessment under date of March 2 and says he is glad to hear that so many of '86 are still on the carpet. "My doctor says I am good for another 10 years and as world affairs are going today, I guess that is long enough." Harry Clifford has written promising (?) some material for The Review. Doolittle sent his assessment from Wallingford, Conn., where he was visiting his daughter. Wilson Low writes from Saratoga Inn, Saratoga, Calif., and says that the first part of April will find him in Santa Barbara where he will remain a month before returning to Sheridan, Wyo. He promises to write about the 'deviltry' the chemical class of '86 pulled off in the laboratory! He is playing nine holes of golf every other day and so keeps fit. Says nothing about his score, though. I wonder why not! Other members sending their assessments but no news are the Secretary, Pierce, Batcheller, Noble, and Benson. If it is a question with any member whether to send his dollar or 'a few kind words,' please send the words. The Secretary could cough up the dollar but cannot supply the information without which the notes are of little value. Better a line of actual doings than a cycle of the Secretary's drivel (to paraphrase a familiar quotation). – ARTHUR T. CHASE, *Secretary*, Post Office Box 4, Island Creek, Mass.

## • 1887 •

We regret to report of the death of the Hon. Henry W. Holt, Judge of the Supreme Court of Appeals at Staunton, Va. It may have been some years since any of us met him in person, but he never neglected to send the Secretary his regrets when he received the notices of our reunions. We are all octogenarians and as our numbers grow smaller there are fewer of us active enough to travel or stir about in any manner that is noteworthy enough to create news. However, Ames Carter, his wife, daughter and son-in-law spent most of February at Nassau in the Bahamas. It was not new to them as they had been there before. Your Secretary is writing this from Ft. Myers, Fla., where the bracing climate is enjoyable if he does nothing but breathe the tropical air — but he will be back in Chicago in April. — LONSDALE GREEN, *Secretary*, 5639 Kenwood Avenue, Chicago 37, Ill.

## • 1888 •

Through the President of the Class, we have received the following additional information concerning the late Secretary, as supplied by his daughter. Since Mr. Collins' retirement in 1932 from the Spray Engineering Company, he had lived in Cambridge, Mass., and Princeton, N.J., during the winter months, and on Chebeague Island, Maine, for at least four months of each summer. He was secretary, treasurer and a very active member of the Chebeague Island Golf Club for many years. He had been a member of the Princeton Old Guard, an interesting group of retired professional and business men, and was made a Fellow of the American Society of Mechanical Engineers in 1947. He was greatly interested in class activities and his generous and enthusiastic services will be deeply missed by all. — EDWIN S. WEBSTER, *President*, 49 Federal Street, Boston 7, Mass.

## • 1889 •

Franklin W. Hobbs, Class President, was in the hospital at the time we requested news for publication in The Review. We are sure you all join us in sending Mr. Hobbs our best wishes for a speedy recovery. He may be addressed at 78 Chauncy Street, Boston 11, Mass.

## • 1890 •

The death of Phillip M. Hammett on March 14 leaves 27 of our 101 graduates, all close to 80, still doing things. And the years beyond 70 are for many far from being "years of labor and sorrow." We have two active bank presidents, others are directors of such companies as duPont de Nemours and General Electric. Concerning Hammett, the Florida *Times-Union* says: "He was a native of Newport, R.I., and attended Harvard University and . . . Technology before entering railroad work. He was superintendent of motive power of the Maine Central R.R. and retired from his position at Portland in 1929." For a few years he lived in New York with occasional trips abroad, but later lived at Mandarin, Fla., "where he turned his interest to community affairs." He is survived by his wife, a daughter, and two sons. The Dorchester *Citizen* of February 17 has a picture of Harry B. Burley, 3d Vice-president of the Dorchester Board of Trade, and President and Treasurer of the Boston Insulated Wire and Cable Company since 1908. Miss Bragg writes that she goes, once or twice a week, to fold dressings at the Red Cross and that 271 Dartmouth Street, Boston, is to be her permanent address, though she may go to Marblehead this summer. A recent letter from Will Creden says that he is "lots better," and a snapshot enclosed is substantial evidence. (Why don't all of you '90 men send in snapshots so we can have an octogenarian gallery for our 60th reunion?) Creden has become an amateur meteorologist and has much interesting data on this cold Montana winter. Franklin Knight writes that in February, 1948, he lost his wife, and after living alone in Great Barrington for some months, went to live with his youngest son in Lenox, Mass., which is to be his address. — GEORGE A. PACKARD, *Secretary*, 53 State Street, Boston 9, Mass. HARRY M. GOODWIN, *Assistant Secretary*, Room 5–213, M.I.T., Cambridge 39, Mass.

## • 1891 •

Our friend and classmate, Charles W. Ricker, passed on in Evanston, Ill., on March 8. He was ill for several years and confined to his room for some time. His son, Charles W., Jr., M.I.T. '28, lived close by and kept us posted. He was buried in Buffalo. Charles was a very loyal member of our Class as several of us who visited him in Havana can personally testify. He thoroughly enjoyed playing host to his classmates, and as he lived in Havana many years, he knew the ropes. He used to come north in the summer, and his hobby was mountain climbing. He came to our 50th reunion, and had a grand time, but could not make our 55th. On one of his last visits to Boston, he said he was getting in trim to climb Mt. Washington in his 75th year, but "time" caught up with him.

The following is from the Havana *Post* of March 10. "Oldtimers in the Anglo-American Colony will regret to learn of the passing away of Mr. Charles William Ricker. He was born at Portsmouth, New Hampshire on July 17, 1869, son of Charles Clement and Sarah Mehitabel (Joy) Ricker of Puritan Ancestry. He was a graduate in Electrical Engineering of the M.I.T. and a Fellow of the American Institute of Electrical Engineers. He was married in 1902 at Buffalo, New York, to Miss Grace Whitney. The Rickers came to Cuba in 1911 and were very active in social circles of the Anglo-American Colony. He was a member of the American Club, Havana Country Club, Biltmore Yacht and Country Club, and the University Club. Although a Unitarian, Mr. Ricker was active in the Holy Trinity Church of Havana and Director of Havana Y.M.C.A. Mr. Ricker came to Cuba as Chief Engineer and Assistant General Manager of the Havana Electric Railway Company, and continued in the same position in the Havana Electric Railway, Light & Power Company from 1914 until 1928 when he became Chief Engineer and later Consultant of the Compania Cubana de Eletricidad, which position he held until May 1946 when he retired on account of ill health and went to Evanston, Illinois to be with his son Charles W. Jr."

The above article mentions several positions previous to going to Cuba, which included work with United Electric Securities Company, General Electric Company, Cleveland Construction Company, Electric Traction Company, Interborough Rapid Transit, Warren Bicknell Company, Cleveland. He is survived by his son and two grandchildren. The American Club of Havana wrote his son as follows: "In the name of the board of governors and members of this Club, please accept our most heartfelt sympathy at the passing of your father, which sad news was communicated to us by his friend and associate, Mr. T. M. Victory. Out of respect to his memory our flags were displayed at half-mast, the door of the Club was draped in mourning and half-closed and notices were posted within the Club. In the official minutes of this Board, there will also be recorded an appropriate resolution of commemoration. Your father had been a member of this Club for 34 years, and although he had left Cuba some years ago, there are many of us who remember him with fondness and admiration."

A recent letter from Walter Hopton reads in part as follows: "I was saddened to learn of the deaths of our Fraternity brothers, particularly of Phil Darling, Charlie Tillinghast and Ab Read, all of whom I knew well. You will recall the first reunion dinner at the Hotel Lenox when Phil was the principal speaker. I was so impressed by his remarks, that I had them printed and sent them to all the brothers. I was appreciative of Charlie's remembrance of me at Christmas, 1947, by sending me Christmas greetings. They will all be missed at our Fraternity reunions. I continue to attend to business five days a week, but have given up long-distance automobile business trips, and hope to continue to fill in the time so as to be able to attend our 60th reunion with Lester. I will continue to spend Christmas and New Year holidays with Lester and his family and next summer will be with them at Webster Lake."

The editor of The Review sent out a message to Class Secretaries asking them to make a special effort to send in any matters of interst for the May number. What we may call routine is noted above. Because of our being one of the older classes, with relatively few active members, it may be of some interest to those listed as Class of 1891, and perhaps others who know us, to give a brief summary of our present roster. In the spring of 1946, previous to our 55th reunion, we published a list of all members with known addresses. There were 93 on that list as compared with 134 five years previous (our 50th). In what amounts to a three-year period, the list with known addresses has dropped from 93 to 72, all due to deaths except two "mail returned." Of this 72, about half are active or interested in class affairs, answer correspondence, pay dues, come to our

reunions or dinners when feasible. Most of the inactive were only in Technology for a short time or took special courses. The total number on our original list was 315 of which about half left the Institute before the second year. Those days it was easy to get in, but hard to stay there, a large majority were local or New England men and many went to Technology improperly prepared, of for other than personal preference. Of the present active list of approximately 36, several are ill, and about half live at a distance, so that those available for class dinners are relatively few, and our regular attendance of 14 or 15 seems highly satisfactory. In other words, the Class of 1891 expects to "carry on" for some time to come, and a class dinner is planned for May or June this year. — HENRY A. FISKE, *Secretary,* 260 West Exchange Street, Providence, R.I.

## • 1892 •

The Secretary has little to report at this time except that he is informed that four members of the Class at least will attend part or all of the events of the Mid-Century Convocation. George H. Ingraham, the Class President, and Arthur J. Ober expect to attend the meetings at the Boston Garden and a part of the other events at the Institute. Harry J. Carlson and the Secretary will likewise attend a portion of the events, including the inauguration of President Killian. They will both be in the academic procession. Carlson, as usual, with the members of the Corporation and Fuller among the professors emeriti. The Secretary has not had time to check up on possible activities by other members of the Class before being obliged to go to press. — CHARLES E. FULLER, *Secretary,* Post Office Box 144, Wellesley 81, Mass.

## • 1893 •

The Secretary regrets to inform the Class of the passing of Frank S. Badger. The following information is quoted from the Boston Sunday *Herald:* "Frank S. Badger, 81, internationally known hydraulic engineer, formerly of this city died . . . [on March 17] in Arlington, Ill. . . . He was born in Boston Dec. 27, 1867, and graduated from . . . Technology. . . . For six years he was employed by the Locks & Canals Corp. of Lowell, and later was associated with a Boston engineering firm and with the U.S. Reclamation service. He worked on the design and construction of the hydroelectric plant at Walla Walla, Wash., the Truckee Carlson canal and Roosevelt dam. He spent two years in Mexico with the Monterey Water Co. From 1909 to 1944 while associated with the J. G. White Engineering Co. of London, he directed large projects in Argentina, Chile, Brazil, Uruguay, Colombia, Ecuador, Burma, Australia and New Zealand. He was the author of numerous technical reports on hydroelectric projects. During the first world war he was in London in charge of the inspection of hundreds of thousands of tons of construction materials shipped from England to France for the AEF. He was a member of the Boston Society of Civil Engineers and of the American Association of Engineers. He leaves his wife, Mrs. Belle Randall Badger of Lowell, and a son, F. Sidney Badger of Kokomo, Ind." — FREDERIC H. KEYES, *Secretary,* Room 5–213, M.I.T., Cambridge 39, Mass.

## • 1894 •

Before these notes are in print, members of the Class will probably get a letter regarding our forthcoming reunion on June 10 and 11. For the benefit of other readers, a brief provisional statement of our program may be of interest. On June 10 the men of the Class and their wives will have the privileges of the Brae Burn Country Club, including golf for those who wish, and all the facilities of the Club. A luncheon will be arranged, and possibly a class dinner at night. It will be a fine place to meet and exchange the experiences of a half century, and for the ladies to play bridge and swap discussions about their grandchildren, and so forth. Saturday, June 11, is Alumni Day, and M.I.T. will be the scene of our activities. Guided trips are already being planned to new and important research laboratories, new buildings, operations most of us have never seen, and points of special interest. The usual alumni luncheon in the court, with a special table for '94; the reception for Dr. and Mrs. Compton and Dr. and Mrs. Killian at the new Senior House; and the Alumni Banquet at the Statler at night will give us a busy day. Somewhere in the two-day period there will be a brief record of the past five years, and some special bits of entertainment; scientific, literary, or pictorial, as the Class does not lack talent in these regards.

The reply cards to the January postal of inquiry have yielded interesting facts for these notes. Henry Warren has been retired for several years from the Warren Telechron Company, which he founded, but is just as busy now as president of the Lombard Governor Corporation, and in operating an experimental organization developing some of his inventions. In addition, he is president of the Middlesex Extension Service, on the executive committee of the Summer Institute for Social Progress at Wellesley College, and chairman of the committee in charge of the 500-acre Ashland town forest. Henry is the perfect example of the successful scientific or engineering executive with a highly developed sense of social and civic responsibility.

Arthur Shurcliff (class poet) and his son, Sidney, are in professional practice together as landscape architects, office at 14 Beacon Street, Boston. Another son, Flavel, is a lecturer on legislation and administration in the Department of City and Regional Planning at M.I.T. Arthur was perhaps too modest to report that he has written a most delightful book entitled, *New England College Men Walking and Talking,* which develops nostalgic memories of the days in the early part of this century before men forgot how to walk. It was published by the Old Corner Bookstore. Frederick S. Bigelow, long on the editorial staff of the *Saturday Evening Post,* still contributes frequently to the editorial page, although nominally he retired in 1929. Leslie Dana, active for years in executive affairs in St. Louis, reports himself as "unemployed," which is taken to mean that he has retired. With this leisure he should come to the reunion where friends of long ago would gladly welcome him. Billy King is happily recuperating from an illness which cut down his activities, but expects to be with us in June and to bring Mrs. King.

Ned Hunt has been elected county commissioner of Cumberland County, Maine, a job for which he is eminently fitted by his years of experience as city engineer of Portland and his wide consulting work. Charles Abbot is refuting Mark Twain's statement about no one doing anything about the weather. Abbot is telling Washington people exactly when they may expect cool days in each month. A prediction for the whole of 1948, made and sealed in January of that year, was recently opened and showed an almost perfect score. Abbot is certain that the ups and downs of temperature, or "weather," are almost entirely based on a regular solar periodicity and not on terrestrial causes. Perhaps he can guarantee good weather for the reunion. Earl Jenckes, President of the Fairy Silk Mills at Shillington, Pa., hopes to be in Boston for our reunion. His address is 403 Wyomissing Boulevard, Wyomissing, Pa. George Leiper of Philadelphia also hopes to come. George is now a gentleman of leisure. George Taylor operates his own machine tool business and represents other manufacturers of machinery and equipment as well. His office is still at 31 Milk Street, Boston. Henry Copeland, 170 East 79th Street, New York, is still active with L. Sonneborn Sons, Inc., where he has been for years. He hopes to be at the reunion.

The Secretary and his wife have recently returned from a seven weeks' trip to the West Coast, a combination of business and winter vacation. The Refrigeration Research Foundation, Inc., of which he is chairman of the Board of Governors, held its annual meeting in San Francisco in early February. This meant attendance and associated duties, and also gave an opportunity for another of those enjoyable meetings with Austin Sperry and Jack Nowell. Austin was host at luncheon at the Bohemian Club, and we were joined by Arthur E. Fowle'93; a most enjoyable occasion. Both Sperry and Nowell are hopeful but not certain of being with us in June, but by enlisting a certain amount of pressure through our respective wives, we hope all doubts will be dispelled. Our seven weeks' trip included visits to Seattle, Berkeley, the Price ranch at Los Alamos, and Santa Monica, and Beaumont. As guests of Philip Bates'24 and his charming wife at Santa Monica, we had a delightful visit, and the pleasure of a trip through Death Valley with them which was most interesting. One of the rewards of an ex-professor is the warm friendship of his former students, as in this case. Attendance at a scientific conference in Chicago on the way home together with the San Francisco meeting gave the whole trip a professional flavor.

The secretary wishes to mention with deep appreciation the help of Claflin,

Owen and Shurcliff in planning for the June 10 and June 11 days. — SAMUEL C. PRESCOTT, *Secretary*, Room 5-213, M.I.T., Cambridge 39, Mass.

## • 1895 •

A card-photograph of Mount Francois Matthes has been received from Edith Lovell Matthes, sent to us in loving memory of her husband, Francois Emile Matthes: Born, Amsterdam, Holland, March 16, 1874; Died, El Cerrito, Calif., June 21, 1948. Mount Francois Matthes, in the St. Elias Range, Yukon Territory, Canada, was named in the summer of 1948 by the members of the Arctic Institute of North America's Project Snow Cornice. "I will lift up mine eyes unto the hills from whence cometh my help." The Class is most gratified to learn of this wonderful tribute to a most remarkable and distinguished man of the Class of 1895. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

## • 1896 •

A meeting of the Class was to be held at the Engineers Club, 96 Beacon Street, Boston, at 1:00 P.M. on April 2. At the time these notes were prepared, the following classmates had indicated that they would attend: Butler Ames, R. E. Bakenhus, Fred Damon, Robert Davis, W. T. Dorrance, James Driscoll, Charlie Gibson, H. G. Grush, Perry Howard, E. S. Mansfield, J. A. Rockwell, F. T. Rundlet and S. T. Smetters. The following sent their regrets: Julia Addison, W. P. Anderson, W. McC. Andrew, John Ashton, who states that he will be too far away to attend; F. W. Bartlett, who adds, "But à la Bill Cunningham, one vote for Johnny Rockwell"; Charles Batchelder, D. M. Bates, on an extended vacation; P. L. Bicknell, L. B. Breed, E. J. Cadieu, who "will be away from Boston at that time"; Helen Cheever, Lucretia Mott Churchill, F. D. Clark, who sends "greetings and best wishes to all — I'll be with you in spirit"; J. W. Clary, W. D. Coolidge, S. D. Crane, C. I. Crocker, Henry Cummings, Ida Curtis, Ada Daniels, H. W. DeLong, Helen Chamberlain Dodd, John Eynon, R. C. Fayfield, William Field, L. A. Freedman, Myron Fuller, Robert Fuller, Hattie Gates, who is spending the winter at the Altamonte Hotel in Altamonte, Fla., where she has spent the past four winters; N. C. Grover, C. H. Hall, G. C. Hall, H. G. Hamlet, C. W. Hapgood, G. E. Harkness, W. E. Haseltine, who says, "Sorry, but I am in California — best regards to all my old classmates"; F. M. Heermann, George Hewins, who adds, "sickness here and I leave only on urgent affairs"; James Howe, W. H. James, M. S. Jameson, Marshall Leighton, Paul Litchfield, W. H. McAlpine, John McIlvaine, William Mattocks, Walter Mayo, E. E. Mead, I. S. Merrell, C. P. Moat, Guy L. Morrill, Lou Morse, who sends his best regards to the boys; A. C. Nash, H. D. Newell, C. S. Newhall, F. B. Owen, J. E. Owens, K. A. Pauly, who was leaving for the South, not to return until the end of April; F. R. Peabody, Myron Pierce, who also expected to be on vacation in the South; E. H. Roberts, A. G. Robinson, A. F. Ruckgaber, L. K. Sager, who sends best wishes; Henry Sears, Victor Shaw, F. H. Smith, A. E. Smyser, Charles Stamp, R. T. Starr, also down South; Walter Stearns, Esther Stone, Mike Sturm, who writes: "I am still doing hospitals exclusively, and, as a member of the Roster of the American Hospital Association, I am up to my neck either as associate architect with sundry firms or as consultant for such buildings. I do hope to get down with the gang some of these days. I will, of course, be with Compton and Killian in April at the meeting. I send to you and all the rest of the fellows a most sincere and heartfelt greeting"; E. L. Sturtevant, John Tilley, C. B. Tower, H. H. Tozier, M. C. Tuttle, H. A. Waterman, M. S. Wilcox, who sends his greetings; J. H. Willis and Conrad Young.

The Secretary received a letter from R. E. Bakenhus, Rear Admiral, U.S.N., retired, which we quote in part: "I looked up Ewing in the telephone book, called the number and talked with Mrs. Ewing. Mr. Ewing died in May, 1947. He had owned the oldest bookstore in Williamsburg; the Cole Bookstore, a famous place. Mrs. Ewing lives there alone, near William and Mary College. She was graduated from the Institute in 1897 in math and physics." — John Eynon kindly sent a newspaper clipping from the Los Angeles *Times* which we quote as follows: "Dr. Russell W. Porter, beloved 'artist of Palomar' and Arctic explorer, died . . . [February 22] of a heart attack at his home, 615 Mentor Ave., Pasadena. The artist-astronomer's detailed sketches of the 200-inch telescope have guided the builders of the instrument since the inception of the project in 1928. . . . His genius was in visualizing complicated machinery in three dimensions. At the age of 77, he was observed a few days ago, in his California Institute of Technology office, completing drawings of a mammoth spectrograph to be used with the instrument. With him at the time of his death were his wife, Mrs. Alice Marshall Porter, and Mr. and Mrs. David O. Woodbury ['21]. . . . Woodbury is the author of the book, 'The Glass Giant of Palomar. . . .' Besides his widow, he leaves a daughter, Caroline Porter, who resides in Maine. . . ."

A letter from W. P. Anderson reads in part: "No one can take Charlie's place. He seemed to know everyone in the Class, and you will have a hard time filling his shoes. However, you and Fred will do a good job, I am sure. I intended to go east on the tenth of last June, but went to the hospital instead and did not leave home 'til July 3. I would have called you and Charlie, but the doctor did not want me to stop over in Boston." — We also heard from E. C. Jacobs who tells us that he and Mrs. Jacobs are wintering on a small island in the Lesser Antilles. — Mrs. Burdick has received another letter from Mrs. Lindenlaub in Germany inquiring as to Charlie's health. You will remember that Mrs. Lindenlaub's appeal for food was mentioned in previous notes and I am sure any help from members of the Class would be very much appreciated. Her address is: Mrs. Hedwig Lindenlaub, Friedrichplatz 3, (10b) Chemitz (Bundesland Sachsen) Russian Zone, Germany.

We noted a poem entitled, "To Winston Churchill," published in the *Christian Science Monitor* which was written by Charles H. Gibson. This poem was also read by Dr. Compton at a reception held at the Hotel Statler in connection with the Convocation exercises. Mr. Gibson's published poetical works include two volumes, *The Spirit of Love and Other Poems* and the well-known sonnets of *The Wounded Eros*. He is also the author of "Ode to England," written at the close of the Boston Tercentenary and "Ode on the Burial of the Unknown Soldier," completed at the close of World War I.

The Secretaries greatly appreciate Lawrence Sager's draft of the procedure which the Class followed in carrying on the official appointment of the two Secretaries. — JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge 38, Mass. FREDERICK W. DAMON, *Assistant Secretary*, 275 Broadway, Arlington, Mass.

## • 1897 •

James L. Fyfe, IV, of 316 South Euclid Avenue, Oak Park, Ill., died on January 21. We have no other details than the above, which were received from his wife. — Edmund S. Manson, Jr., VIII, died in Washington, D.C., on February 2. Edmund was an astronomer and had been in charge of the department of astronomy at the Ohio State University from 1907 until his retirement in 1947. Since his retirement, he had lived in Washington. — We have just received the somewhat late advices of the death on May 30, 1946, of Franklin Baker, Jr., III.

To Proctor L. Dougherty of Washington we are indebted for the privilege of ending these notes with a happier paragraph than that which precedes it. In February, the University Club of Washington, D.C., observed the 45th anniversary of its founding. Our classmate, Proctor, was the chairman of the organization committee that founded the Club on February 22, 1904, and is one of the 14 surviving charter members. As a tribute to his work at the time of organization and during subsequent years, he was appointed chairman of the anniversary committee for the 1949 observance. The late President Taft was the first president of the Club, which at present has 2,500 members. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

## • 1898 •

Put down in your engagement book, Saturday, June 11, 1949. This will be Alumni Day. Remember the Golden Anniversary last year. Your officers are arranging for a continuation get-together this year. Full details in ample time to make all necessary plans. Since our Golden Anniversary, great events have been happening at M.I.T., which will culminate in the inauguration of James R. Killian, Jr., '26 as the tenth president of M.I.T., and the Mid-Century Convocation on the Social Implications of Science, all of which will be found fully covered in other pages of The Review.

Remember our Golden Anniversary class dinner at the Algonquin Club, and that in the course of the festivities, it being held on the birthday of our youngest classmate, Bill Brewster, in a jocular mood we sang the Happy Birthday song in his honor. Now comes the following tribute printed in the *West Virginia Construction News:* "1620 – In the year 1620, – William Brewster put aboard the good ships *Mayflower* and *Ann* his flock of Pilgrims and sailed for Plymouth, Massachusetts. In the year 1919, – William Brewster VIII came to the State of West Virginia, to represent the Federal Bureau of Public Roads. His coming to West Virginia meant more to the State than the millions of dollars of Federal Aid given the State. Bill, as he is affectionately called and known to his legion of friends, is as stout and staunch as the rock on which his forefather landed. He has only one code of ethics, with no turns or deviations, as the foundation was based on fairness to all. In his retirement from government service this coming June, – Bill, like his forefather, leaves a heritage of trained engineers in the Public Roads Administration office in Charleston, to carry on the same fairness he carried on for so many years. Bill will retire with the best wishes of all connected with the Highway Construction Industry in West Virginia, and he will always be remembered as the best friend they ever had." There must be something very solid in the character of Bill Brewster, which he put into the roads and organizations that he built in West Virginia, to evoke this tribute.

George Cottle contributes the following sidelight on the life of Charlie Wing. George was having his locks trimmed in the barber shop of the Hotel Ponce de Leon in St. Augustine, Fla. The barber, it chanced, was a native of New Bedford. "Know Charlie Wing?" "Yes, everybody in New Bedford knew him. He gave a birthday present to every boy in New Bedford up to the time they were 14 years old. Knives, pens, pencils, and so on, everything a boy would appreciate. His boy had every present he had received. (Whether this generosity applied to girls, also, we do not know. The barber's child was a boy.) The presents started with the first birthday. Charlie was greatly beloved in New Bedford. The church was packed at the service by those who remembered and loved him."

Two more classmates have passed within the Unseen Temple: Martin Boyle and James Muhlig. Martin's brother, John, writes from Washington, D.C.: "My brother, Martin, your classmate at M.I.T., died on February 25 in Washington, D.C., where he had resided since 1904. He had been in declining health for the past three years. He was chemist for Towle Manufacturing Company at Newburyport from 1898 to 1904. He was appointed assistant chemist in the Bureau of Chemistry Agricultural Department in 1904 when Dr. Wiley was chief. He remained there 38 years, retiring in 1942. He studied law at Georgetown University Law School receiving the degree of LL.B. He was a member of the D.C. bar. His official duties in later years were largely in connection with legal work incident to enforcement of the Food and Drugs Act, where a knowledge of chemistry and law were necessary. His hobby was the study of modern languages. He had a good working knowledge of French, German, Italian, Spanish, Portuguese, Russian, Polish and Gaelic. He had attended some of the recent five-year class reunions and had looked forward to the 50th but he was physically unable to attend. He had never married and lived with a sister." Martin was zealous in reforms and welfare philosophy of government. His black eyes would snap and his prominent chin and mouth set in lines of determination when advocating favorite measures. His wit from student days was rapier like. Listen to this from the questionnaire submitted to the Class as the basis for the statistics of Class Day: Question. "How far is your home town from M.I.T.?" Reply by Martin Boyle. (Home town, Newburyport, 39 miles from Boston.) "24,961 miles going the other way." – James F. Muhlig, II, was associated with E. I. Du Pont de Nemours Co., Inc., for many years in an engineering capacity. He died on December 16, 1948. We hope to have more data later concerning this classmate.

Lester Gardner journeyed to Boston in January and was the principal speaker in the Hotel Vendome at the 64th annual meeting and dinner of the Drysalters Club of New England. 1898 was further represented at the head table by George Cottle and Ed Chapin. Other M.I.T. men in the audience were Alex Morrison'13, John Dalton'15, Azel Mack'15, and Hyman Selya'19. As one diner remarked, "It looked like a reunion of the Class of '98, M.I.T." Lester, pardon, Major Gardner, discoursed on the subject: "Aviation, Yesterday, Today and Tomorrow." He was in fine fettle in presenting his favorite subject and gave many interesting "firsts" in aviation, associated with Boston. Thus, the first aerial photo was taken in Boston.

A. W. Tucker, after a career in mining and for 17 years until he retired, acted as business manager of St. Mary's Episcopal School at Raleigh, N.C. When he took up the responsibility, the school was $30,000 in debt with an inconsiderable plant and no sizable assets. When he left, there was a surplus of about one quarter of a million and the plant was all free. Hurrah for the Miner's Union, and hurrah for the Tech training which enables the right man to make a success in diversified activities. – Roger Babson is still enthusiastic about gravitation. He has purchased properties and buildings in New Boston, N.H., to act as a center for the collecting and cataloging of data pertaining to gravitation. This task will be under the direction of a prominent scientist from the Bureau of Standards of Washington, D.C.

Ernest Bragg, our church historian, was honored recently at a testimonial dinner by the official board of the Methodist Church in Milford, Mass. He had served for 34 years as treasurer of the trustees of the church. A clipping from the Milford *Daily News* shows a photo of our classmate and gives many interesting details of the occasion, including a presentation of a pen and pencil set, remarks by the guest of honor and the reading of a poem from a book of poems which he has written. – Elliot Barker dropped in at the office the other day and we had a real '98 visit and get-together. Elliot's son, Kenneth, is chairman of the western Massachusetts section of the American Institute of Chemical Engineers. – Dan Edgerly writes: "Your Florida trip stirred me to activity. I am off to Phoenix, Ariz., for the balance of the month. (March.) I think the central section of Florida, where you were, is the all around pleasantest for winter residence. But to go bathing in the winter time, temperature 75 to 85 degrees, is another "kick." We do not have any spring (until May 15) in Chicago, so I am going to Arizona. Want to see the desert flowers in spring. I am keeping in mind to be in Boston in June."

And so, boys and girls of '98, take out the time tables and bring out the old (and new) cars and get them all overhauled to be in Boston on Alumni Day, June 11. – EDWARD S. CHAPIN, *Secretary,* 463 Commercial Street, Boston 13, Mass. JOSEPH C. RILEY, *Assistant Secretary,* 9 Pond View Avenue, Jamaica Plain, Mass.

## • 1899 •

Ralph W. Loud, I, has been in the New England Deaconess Hospital in Boston since the latter part of January. Between that time and the first week in March, 12 transfusions were necessary. Complications have hindered his recovery, but it is hoped that with the coming of spring his progress will be more rapid. Send him a card, fellows, and address it to the hospital. He will appreciate it. – A notice has been received from George H. Priest that "for urgent reasons we have disposed of our maple products business and shall be unable to fill any orders for 1949." He has been thus engaged since his retirement from engineering work several years ago. His address is Sugar House, East Orchard, Brattleboro, Vt.

The following is quoted from the Boston *Herald* of March 20: "Hervey J. Skinner of Wakefield, president of Skinner & Sherman, Inc., will be honored by the nation's chemists and chemical engineers at a general assembly of the American Chemical Society, in San Francisco, March 28. A special diploma certifying 50 years of continuous membership in the society will be presented to Skinner, one of 14 to be honored for 50-year membership. A former chairman of the Northeastern section of the American Chemical Society, Skinner is a vice-president of the Wakefield Savings Bank, chairman of trustees of the Lucius Beebe Memorial Library of Wakefield, former president of the Baptist Social Union, a trustee of the New England Baptist Hospital and the Andover-Newton Theological School, and a former president of the Bear Hill Golf Club of Wakefield."

Alfred W. Harrison, III, died at his home in Durango, Colorado, on June 4, 1947. He was survived only a little over a year and a half by his widow. Arthur retired from active practice as a mining engineer in 1938. For the 30 years previous to this he was interested in gold, silver, lead and zinc mining in southwestern Colorado. His death was due to silicosis, caused by the inhalation of quartz dust

into the lungs over a period of many years. — Harry H. Morton, IV, of Plymouth, Mass., died on August 31, 1945, according to information received through the Alumni Secretary's office. A letter sent by your Secretary to Morton's last address has elicited no further information. — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. MILES S. RICHMOND, *Assistant Secretary*, 201 Devonshire Street, Boston, Mass.

## • 1900 •

The approach of spring and the season of reunions reminds us again that it is only a year to our golden 50th reunion. Plans for it are still in rather sketchy form but it seems to be the opinion of all that we should go to the Cape for a few days as we have done each five years since 1925. This will be followed by the usual Class Day and Commencement programs and Alumni Day. Any suggestions for the enrichment of our program will be welcomed. Send them to the Secretary and they will be turned over to the proper committee. We surely hope that this will be our largest and best reunion. Everybody, plan to come.

Fred Lawley has been in California this winter. We understand that he has been in LaJolla and Pasadena. — Joe Draper is at Palm Beach again this winter. — Stanley Fitch says that he saw Louis Crowell in November and that Lou is much improved in health.

George Russell, who retired from the teaching staff of the Institute, is back again in the hydraulic laboratory. He is working on a research problem for the Army Air Force which he reports as being to determine "the validity and applicability of the hydraulic analogy of the shock wave to the supersonic flow of gases." He has been working on this since October and hopes that it will be completed by June, although it may go further. George reports that he is feeling fine and is also busy with local town problems, being on the board of health of the town of Lexington. He is interested in the Lexington Health Council which is co-ordinating the health problems of 15 town agencies. And as if that isn't enough, he is now in charge of all transportation for the M.I.T. Convocation.

Marcy Sperry, II, died suddenly in Washington, D.C., on March 30. Your Secretary attended his funeral in Milton Cemetery on the afternoon of April 2. Marcy was president of the Washington Gas Light Company.

We have received change of address notices for James G. MacDonald, III, who is now at 654 Columbia Road, Dorchester; Samuel P. Heitshu who has gone from Lancaster, Pa., to 1029 Chaffee Place, Daytona Beach, Fla.; and William H. Hubbard, V, from Margareta, Canal Zone, to 31 Washington Street, Wiscasset, Maine.

If you want class news in each issue of The Review, you must supply the Secretary with more information. He can get it in shape for publication but he can't invent it! We appreciate your natural modesty, but please overcome it and send in something about yourself. Remember that the other fellows are just as interested in you as you are in them. — ELBERT G. ALLEN, *Secretary*, 54 Bonad Road, West Newton 65, Mass.

## • 1901 •

Dennis Haley writes: "Retired from active executive duties on January 1, 1949, (vice-president) but retain advisory and consulting connection with Climax Molybdenum Company. Another new granddaughter last year. Expect to spend the next five months in Venezuela, Peru, Chile, Argentina and Brazil. Hoping for a happy landing in each. Will spend some time with my daughter, Mrs. Frank H. Storms, in Caracas. I failed to reach Jim Monaghan on my Boston visit. Some of these days on my return from South America I am going to get in touch with you."

Frederic Bass reports: "After 42 years in the civil engineering department of the University of Minnesota and outside practice, I retired and for three years was executive director for the American Public Works Association. Have been a member (president for three years) of the State Board of Health for 20 years. With other members, I enjoy the class letters which have been so painstakingly prepared. Hope to join the baldheads and white whiskers at the 50th anniversary." Fred is professor emeritus, University of Minnesota.

Ted Lange writes in part: "I enjoyed the excellent and complete report (annual), also the very satisfactory financial condition. Our M.I.T. Club of the Connecticut Valley is progressing 'O.K.' We have four dinner meetings a year (last year, five). Our membership (paid up) was 158 last year and generally averages 50 in attendance at the meetings. Am wondering if you expect to attend the Convocation. I have made arrangements to attend."

A note from Charles Bittinger, Captain, U.S.N.R., retired, reads as follows: "Edith and I have just returned from a little visit to Honolulu, a second honeymoon; the first one was 45 years ago. We made the round trip by United Air Lines and the new planes with pressure cabins fly about twenty thousand feet and are as steady and smooth as sitting down in a room in Georgetown — no seasickness. I appreciated very much the fact that Mrs. Peterson attended my talk at the National Arts Club on the 'Bombs at Bikini.' I wish all the audience had been as enthusiastic as she was. Physics is a different story from our M.I.T. days. We know something about matter being turned into energy, but the effort at Stanford University of transforming energy into matter is something to read about but never see — like man bites dog. Please tell Mrs. Peterson I sent one of my atomic bomb pictures to the exhibition of the National Academy of Design. I think the show is open now. We are thinking of Duxbury where we hope to see Mrs. Peterson and yourself this summer."

Lammot du Pont is retired and says: "Am enjoying present occupation. If any members of the Class have any comments to make on the subject of how to prevent a local private day school from 'going broke,' or a private hospital 'going broke,' it would be a pleasure to hear from them."

Al Higgins, President, Florida Power Corporation, writes: "Ed Seaver and Mrs. Seaver are down here at Clearwater for the winter, as usual. Had an interesting letter from Alfonso Madero." Excerpts from Alfonso Madero's letter follow:

"If it has been strange to hear from you after so many years, it notwithstanding has furnished me a great pleasure. . . . I have been out of the mining business since long, constant failures in all my ventures are responsible for that. . . . I hope that it will be possible for both of us to attend our 50th anniversary in '51. . . . I will be 70 next May 3. Have nine children; six boys, three girls, all married but one of the boys; 18 grandchildren. Health good and still able to work; but I don't like work. . . . " Alfonso's address is Conzumel 90, Mexico City, Mexico.

Sumner Hazlewood (formerly designing engineer, Thorsen Corporation, Ellsworth, Maine) writes: "Although 'retired' from wage-earning occupation, am busy keeping my home in good shape and two summer cottages in condition to rent. At present sheathing with knotty pine, a formerly unfinished room in my home. 70 years old March 7."

Ralph Stearns, retired, formerly hydraulic engineer with Mead and Scheidenhelm, New York City, says in part: "I intend to go to the Convocation on March 31 to April 1 and trust you and other '01 men will be there."

I report with regret the death of Asher L. Weil on February 24. He died of a heart ailment after an illness of about a year and a half. Asher Weil was president of the Electro Sun Company (blueprints, photoprints, photo offset) which he established over 40 years ago, and which has three offices in New York City. He was born in Wilkesbarre, Pa., in 1879. He is survived by his wife, Riva, and his sister, Bertha W. Wilner.

We note that Ralph Robinson, retired, formerly manufacturing engineer (electronic tubes) for the General Electric Company, Schenectady, N.Y., is a member at large of the Alumni Council and that he served on the Alumni Association's National Nominating Committee which recently completed its work. — Will Farnham, formerly the local traffic engineer for the American Telephone and Telegraph Company, says: "Have spent the winter in New Jersey. Expect to be at the 'Carolina' in Pinehurst for two weeks in March and at the 'Wentworth by the Sea' in Portsmouth, N.H., for the months of July and August. Certainly find enough things of a personal nature to occupy all of my time now that I am retired." — The Newton, Mass., *Graphic* reports that D. Leighton Ordway is helping to teach chess to an enthusiastic class of youngsters. Young men and women of junior high and high school age are invited to attend any Saturday afternoon at the Young Men's Christian Association.

We quote part of a clipping from the Winchester, Mass., *Star:* "Mr. Roland E. Simonds of Myrtle Street, a life-long resident of Winchester and former member of the Winchester Board of Fire Engineers, retired Monday, January 31, from the em-

ploy of the Associated Factory Mutual Fire Insurance Companies at 184 High Street, Boston, after more than 42 years continuous services as a fire protection engineer. He was presented by the concern with a gift of cash, a leather sport-coat and a pipe. He was also given a testimonial dinner by the General Electric Company, in the various plants of which he had done much fire prevention work, and was presented at that time with a fine wrist watch. Mr. Simonds told the *Star* he has no plans for the future except to 'do a few jobs around the house that have been hanging-fire for years.' After graduating from Winchester High in 1897 he was graduated from M.I.T. as a mechanical engineer in 1901. While at Tech he fired summers on the Boston & Maine Railroad, and after his graduation he continued firing on B. & M. locomotives. After a few months as fireman Mr. Simonds went to work for the United Shoe Machinery Company. He then went to work for Dean & Main, mill engineers, now C. T. Main, with whom he remained about a year, before joining the Associated Factory Mutual December 6, 1906. He rounded out 42 years with the company last December and estimates that he has traveled in its interests more than a million miles during that time."

Bob Williams, who recently retired as engineer, Submarine Signal Company, Boston, says: "It certainly seems odd not to go to Boston to work each day, but so far I am enjoying staying home and find plenty to do. I attended the Midwinter Meeting of the Alumni Association and had a pleasant evening although I was the only '01 man present." — GUY C. PETERSON, *Secretary*, 788 Riverside Drive, New York 32, N.Y. THEODORE H. TAFT, *Assistant Secretary*, Room 3-282, M.I.T., Cambridge 39, Mass.

## • 1902 •

All of 1902 are happy to learn that Adrian Sawyer is to be the next president of the Alumni Association and wish him every success in the new honor. We have always had our full representation in the Council but were not expecting to head the Association.

As many of the Class have retired from active professional work, we are sure that they will be interested to learn how Robinson passes the time in the seclusion of Brunswick, Maine, in the shadow of Bowdoin. In a letter to Bob Baldwin he lists his activities for three weeks in answer to the question, "What do you do with yourself?" He lists attendance at three concerts, three lectures, six one-act plays, a debate, a mercantile exhibit, a political forum on the Taft-Hartley bill at the college, a meeting of the church men's club, the high school fair, and the town meeting. In addition Robbie was able to attend a dinner, several teas, and so on, and "plenty of routine housework, letter writing, some radio and reading but not enough time for the latter." Of course, not every one is so fortunately located as Robbie.

Baldwin's letter, to which the above was a reply, states that Henry Manley is confined to Saint Agnes Hospital in White Plains with a severe illness. We are sure he would be glad to hear by letter or card from his friends in the Class. Baldwin is already looking forward to our 50th and boosting East Bay Lodge.

Under date of March 13, Patch writes: "Both my 60th and 70th birthdays were spent in Honolulu. I have been fortunate enough to be here for my 71st, which came last Thursday. My four grandchildren, or possibly I should say three, because Susan is hardly old enough yet to state her desires, wanted me to come to their home for supper so they could have a birthday cake with me, so I journeyed to Lowell to comply. Grandchildren are a great institution." So say we all. — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston 16, Mass.

## • 1903 •

Zenas Nerses Matteossian, IV, died in Fort Pierce, Fla., on February 10. He was born in Constantinople, Turkey, on July 31, 1877, and came to the Institute after graduating from Roberts College in Constantinople. After our graduation, he was associated with Cass Gilbert, designer of several large buildings in New York City. He retired in 1946.

Myron Clark, V, opened a program sponsored by the Concord, Mass., Rotary Club, called Career Day, at the Concord High School, on February 18. — Dean Potter, VI, of Purdue was the guest speaker at the Purdue Club of Dayton, Ohio, on February 7, and is to be one of the honored guests at Dr. Killian's inauguration. — Hewitt Crosby XIII, Regestein V, and Sears II, all spending a part of the winter in Florida, got together for a small reunion on February 23, at the Hillsboro Club at Pompano. Crosby writes: "Mrs. Sears, Tom and Victoria entertained Regestein, Mrs. Crosby and myself for luncheon. The three members of '03 had a small but lively reunion and discussed old times and classmates to our hearts' content. Few members of the Class were not mentioned in leisurely talk under the palms and, between us, it was surprising that we had seen or heard from a large proportion of '03." Crosby writes further about his "miniature farm" about 60 miles north of Washington, D.C., at Thurmont, Md., where he has a "lively round of visitors" eight months of the year. His daughter, the wife of a professor of mathematics at the University of California, lives in Berkeley. His son lives with his wife and two children in Virginia. Before you read this, the three-day celebration and inauguration of Dr. Killian'26 will have passed. At that time, we expect to have a special class meeting to start plans for our 50th reunion and our contribution at that time. Further details will appear in the succeeding issue of The Review, but meanwhile, be planning for our "Fiftieth in '53." Between now and then, be contacting others in the Class, send in news for these notes to Cushman, and lay your plans to be with us in June of this year for an informal reunion in the vicinity of Boston. Further information of time and place will be sent to you. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston 9, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, Box 103, South Wellfleet, Mass.

## • 1904 •

Well, it looks as though we would have quite a party for our 45-year reunion at East Bay Lodge, Osterville, Cape Cod, June 24 to June 26. Over 40 have said they hope to attend and over one-third of these expect to bring their wives. An occasional reply to our postal card canvass is still drifting in. We hope a good many of you who haven't replied will decide to come and it is not too late for some who said *no* to change their minds. Some have said they can't make it this time but will surely be here for the 50th. One man said, however: "Glad we are to have a 45th reunion, some of us won't be around in five years." This is not a pleasant thought but we can't deny its truth so why not come this year? Quite a number of the boys have given poor health as the reason for not attending. Unfortunately, we are not as young as we used to be and Father Time has a way of taking his toll. Spring is with us again and we hope the warm sunshine will improve the invalids.

The following list includes the names of all who have shown an interest in the reunion including a few who are a bit doubtful. If you see the names of old friends, plan to join them. If your name is listed and you don't see the name of someone you would like to see, drop him a line and urge him to come: John W. Ager, W. S. Anthony, W. U. C. Baton, W. B. Boggs, L. H. G. Bouscaren, H. G. Chapin, J. E. Cunningham, G. A. Curtis, A. C. Downes, W. H. Eager, W. H. Edgecombe, David Elwell, F. W. Farrell, O. D. Fellows, A. C. Foster, Ralph Hayden, C. R. Haynes, C. R. Hayward, E. A. Holbrook, A. M. Holcombe, Charles Homer, Herb Kalmus, H. S. Kendall, A. H. Langley, A. W. Munster, G. P. Palmer, Robert Palmer, Ed Parker, K. E. Peiler, R. M. Phinney, A. P. Porter, H. K. Richardson, E. F. Rockwood, E. H. Russell, Jr., A. D. Smith, Dave Sutton, P. S. Sweetser, W. G. H. Whitaker, Jr., A. C. Willard, W. T. Wilson.

Further details will be sent the last of May to all who are interested. If your name is not on the above list and you want to receive the next notice, send us a card at once. We ought to have nearly a hundred, including wives.

The following interesting item has appeared about Bob Phinney, whose name, incidentally, is in the above list: "In the spring of 1946, Bob Phinney accompanied a group of 14 engineers to China under the supervision of Morrison-Knudsen Company to make a survey of the railways, highways and waterways for the Chinese Government. His responsibility was railway signaling and train operation. The needs for rehabilitation and extension of all forms of communication are great, but the resources are inadequate, and the political and economic situation unstable. In the summer of 1947 and again in the summer of 1948, he spent some time in Spain in connection with the program of the Spanish National Railways for complete modernization of their railway signaling. Mr. Phinney is Engineer of Train Opera-

tion for the General Railway Signal Company of Rochester, New York, and normally carries on studies for railroads to apply modern methods of signaling. He has two sons, twelve and nine, possible candidates for M.I.T. '57 and '61."

We had hoped to get by this month without recording another death but word has just been received of the passing of Henry Flinn. This occurred several weeks ago but no details are available. – EUGENE H. RUSSELL, JR., 82 Devonshire Street, Boston, Mass. CARLE R. HAYWARD, Room 8-109, M.I.T., Cambridge 39, Mass.

## • 1905 •

The Secretary has been on a trip to Houston, Texas, to visit his second grandchild (first granddaughter) and was, therefore, unable to get any class notes to us in time for publication in this issue. – FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 69 Newbury Street, Boston 16, Mass.

## • 1906 •

In preparing the notes for this important issue of The Review the Secretary spent a few moments in reviewing his card file which is the up-to-date list of class members. At this writing, March 21, 1949, and nearly 43 years after graduation, the records show 410 members of the Class living, out of a total of 554, or 74 per cent. As a matter of interest these figures were compared with the lists in the 1948 Alumni Register. This shows 411 living, but the list of the deceased members includes 174 names or 30 more than the Secretary's record. On this basis, the percentage living would be reduced to 70 per cent. Further work will be necessary to explain this difference, but the general conclusion can be reached that, with the nearly 600 members listed as associated with the Class, 70 per cent are living.

In compiling these notes for nearly two decades, the writer has encountered many ways by which members of the Class attain publicity. One of the most unusual cases of this kind concerns our classmate, Ralph T. Jackson, IV. A recent edition of the Boston *Herald* contained a picture of a Ralph Jackson who has experienced trouble with poll tax collectors for alleged nonpayment of the poll tax. A glance at the picture explained the difficulty, as the Ralph in this case was the attractive daughter of our classmate, and women pay no poll taxes in Massachusetts. Ralph, Senior, is a practicing architect in Boston and at last accounts was developing plans for the underground parking space beneath Boston Common. Miss Ralph is interested in the literary field and has gained a reputation as a poetess.

Under date of February 23 the Secretary received a letter from Harold Coes which follows: "I have met with several of our classmates lately. Joe Santry and his wife, my wife, Stewart Coey and Albert Hemphill were at the dinner given to Dr. Compton and Dr. Killian. Subsequently, at a luncheon of the Montclair Society of Engineers in New York, I met Joe Santry and Stewart Coey again.

Two weeks ago Floid Fuller and his wife stayed overnight with us, and we had a fine visit. Floid retired, I think, the end of September of 1948. Probably you know I retired from active service with Ford, Bacon and Davis on June 30 of 1948, but my partners have kept me busy from time to time on matters that they wanted me to look after. However, the administration in Washington thought that now I had retired I should work for them. Paul Hoffman wanted me to go to Paris as assistant technical director of the Industry Division of E.C.A., but this I declined. Then Secretary Forrestal wanted me to take the vice chairmanship of the Munitions Board, and this, too, I declined. I am somewhat allergic to working directly for governments and on their payroll. I have been a consultant for governments but I have always had a deep rooted suspicion that if I worked for them directly they would seriously cramp my style." It is gratifying for the Secretary to include these items from Harold as he has always demonstrated his interest in class affairs by forwarding information which can be used in class notes.

In previous issues we have had occasion to refer to many class members retired from active business. For those who have retired, more time should be available for the renewal of class associations which seem to have more significance as we grow older. As this issue is going to many class members who do not receive The Review regularly, the Secretary would be more than glad to hear from any classmates, especially those from whom he has not heard for a long time. – JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

## • 1907 •

Under date of February 13 I received from Sam Very, whose address is Route 9, Box 78, Tucson, Ariz., one of his amazingly worded letters in the first part of which he sets forth his conviction, with which all of us will no doubt agree, that the most important thing in the world of today is the quest for lasting peace. Then he continues: "In 1944 there came to Tucson a tall and gracious gentleman named Edward Frederick Lindley Wood, Viscount Halifax, Ambassador from the Court of St. James to the United States. We met him. We asked him some questions, questions money hunters had had no time to ponder; and requested his discussion of them at a vast gathering of Homo sapiens in an auditorium of the Arizona State University. This he was pleased to do. And it started something because it set free a sort of implementation of that cerebral impulse about starting the quest for peace in childhood. One of our written questions read by Lord Halifax was: 'Would an immediate movement widely sponsored in every country of the United Nations, to effect large-scale elementary school scholarships in foreign countries, help the spread of democracy?' To his lordship this seemed to be a 'profound' idea, this interchange of what he dubbed 'common school' children. I am told that 30,000 listeners heard his dissertation over the microphone, and I know the amazing sequel because the lives of myself and wife have been living it ever since. First locals, then persons far away, became interested, and eventually there was developed out of the composite of judgment a legislative bill, which passed the Arizona Legislature in 1947 as a measure proposing 'large scale international educational interchanges' for the increase of understanding, and the spread of democracy. It passed the House 51–1; the Senate, 13–6; was signed by our dying governor, Osborn, and in his own hand he signed this dictated to 'Gest Very' (our joint pen name): 'It is my sincere hope that this plan will be accorded universal acceptance and that it may contribute to the realization of an enduring peace.' The measure, House Joint Resolution Number 1, of the 18th Arizona Legislature Regular Session, proposed a unique procedure in legislation. The President of the United States was asked to formulate a plan of high school interchange between democracies believing in the four freedoms, and submit the plan to every state and territorial legislature of the United States for debate and amendment. Two years have passed, and in that time my wife and I have received scores of letters from educators in various parts of the democratic world, endorsing unreservedly the bill the State Department had pigeonholed after writing us many commendatory letters upon its aims, which they said, were in accord with their own views. It is now about one month since the new 19th Arizona Legislature convened, and the House has already passed a new HJR 1. I am delighted to report that the amended measure just passed was really worked on; not an idea has been changed, so far as I can see; but hardly a word of our draft remains. This shows to me that our legislators are really serious in desiring what is now proposed. The proposed procedure of the new measure is now to by-pass Washington entirely; send the views expressed upon the original HJR 1 of 1947 directly to all the governors of the states and territories of the United States, and suggest that their legislatures enact 'similar' resolutions and bombard the President with them, and not only the President, but every member of Congress!"

Through the co-operation of Henry Martin, 39–41 Langley Court, Washington 16, D.C., I have some information regarding a few of our classmates. J. P. Alvey, whose home address is the Dodge Hotel, 20 "E" Street, Northwest, Washington 1, D.C., and whose office is at Room 6329, South Interior Building in Washington, wrote to Henry some time ago saying that for the past 12 years it has been a part of his work to handle budgetary and legislative matters relating to the United States Department of the Interior through all of the governmental steps, including final Congressional enactment. – During 1948, H. J. C. MacDonald, who lives at Mulberry Cove, Drayden, Md., was busy in connection with the Hoover Commission government reorganization work. – I was glad to learn something about Frank R. Vanderstucken from Henry Martin, because I had heard nothing from him for a

great many years; and even more pleased to receive a note directly from him. He is now with a small firm of consulting engineers in New York City. His work during most of the years since 1907 has been that of a structural steel designer on industrial buildings, specializing in boiler house construction. During the War he worked part of the time for the War Emergency Board, and held a card for Scientific and Specialized Personnel by the War Manpower Commission. During 1948 he was seriously ill for many weeks. He says that his wife died long ago, and that his daughter, Virginia, lives in Pennsylvania, so he lives alone at 556 West 113th Street, New York, N.Y. — Henry Martin is with the District of Columbia local government, which, of course, is run by the United States Congress. He has charge of the construction of a $1,000,000 project, the Montgomery School. He says that this job will be completed during the summer of 1949, and he has in view another one at Westover Flying Field near Springfield, Mass.

I have a few miscellaneous items of news which came to me as the result of the notices sent to all members of our Class in the early part of this year announcing the reunion which we are to have at Oyster Harbors Club, June 24 to June 26, 1949. There seems to be quite widespread interest in this coming reunion, and at the time of preparing these notes, 45 men have definitely indicated their intention of attending it. Soon after you read this you should receive from me an announcement giving full details concerning this reunion and having a coupon attached to be used for registration for this event. I hope that you all will return the coupon, whether or not you will be able to attend the reunion, and that many of you who did not think you could attend last February will now find it possible to be with us. — Albert L. Burwell's name appears on the letterhead of the Geological Survey of the State of Oklahoma at Norman, Okla., as industrial chemist. — Ernest Miner, regarding whom I wrote in a recent issue, has left Malden, Mass., and has returned to Cleveland, Fla. He says that he knows of some finely situated house lots in the vicinity of his place which can be secured at a price of about $100 per lot, where taxes will be about $1 per year. If any of you are interested, write to our classmate, and he will be glad to give you further information. — A letter received in March from Mrs. John S. Nicholl at 15 Leighton Road, Wellesley 81, Mass., states that John has hardening of the arteries of the brain, and, of course, will never be well again. He is entirely unable to read or write and never goes out of his house except for a daily walk with his wife and the dog. In the 1920's I knew John well when he was very prosperous as the president and treasurer of Riverside Boiler Works in Cambridge, Mass., and it is hard to realize that now he is so ill. Our sympathy is surely extended to him and his wife. — Bill Otis regrets that he will be unable to attend our June reunion on account of the marriage of his only great-niece in western New York at just about the time of our reunion. He wrote me in February that he had thought he had retired from business three years ago, but the management of his company, the American Blue Stone Company of New York, has drafted him back on the job for at least part time. — Roland H. Willcomb now has his address at 1513 Central Avenue, Great Falls, Montana. I do not know what his business relationship is. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. HAROLD S. WONSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

## • 1908 •

The second bimonthly dinner and meeting of the Class for the 1948–1949 season was held on January 11 in the Grill Club Room, Thompson's Spa, Washington Street, Boston, at 6:00 P.M. The clan began arriving in the cocktail lounge soon after 5:30 P.M. and by 6:00 P.M. the following were present: George Belcher, Jefts Beede, Bill Booth, Fred Cole, Nick Carter, Myron Davis, Leslie Ellis, George Freethy, Harold Gurney, Sam Hatch, Karl Kennison, Bill McAuliffe'09, Linc Mayo, and Linc Soule.

Linc Mayo was congratulated on his marriage last November, and best wishes from '08 were extended. Linc and Mrs. Mayo are living at 47 Alton Place, Brookline, Mass. Joe Wattles couldn't be with us as he had to attend a special meeting of the town of Canton's water committee. After dinner George Freethy showed some fine colored movies, including shots taken at our 35th and 40th reunions at Oyster Harbors Club, as well as pictures taken on a visit to Williamsburg, Va., and on a trip to the Saguenay. He showed us some pictures taken by his daughter at Niagara Falls, the Thousand Islands, Toronto, northern New York state, and so on. Linc Soule reported that he now has two more grandchildren.

At the Midwinter Alumni Meeting at Walker the Class was represented by George Freethy, Ted Joy, Harold Gurney and Fred Cole and his son. — The usual March dinner and meeting was not held on account of the big Technology celebration which took place in connection with the inauguration of President Killian.

The last dinner and meeting of the 1948–1949 season will be held on May 17, probably in the Silver Room at Walker. Usual reply post cards will be mailed early in May. Make your plans now to be with us. We hope to have Joe Pope with us to show some of his pictures taken on a trip to Turkey last year.

Classmates will be sorry to hear of the death of Myron Davis' wife, who passed away during the latter part of the winter. The Class extends sincere sympathy to Myron.

Harold Gurney very kindly had prints made of the Kodachromes Doc Leslie took at our 40th and sent prints to the various classmates appearing in the pictures. That this was appreciated is indicated by some of the notes received by Harold: "Thanks a lot for the . . . prints. . . . I prize them particularly because of the changes that are bound to come in these next five years. 'Twas most generous and thoughtful on your part. Myron (Davis)." "It was a real pleasure to receive the pictures as a reminder of the pleasant days spent at the Oyster Harbors Club. . . . The troublesome part of the reunions are the many vacant chairs of the regulars we liked so well. I am driving to Florida the end of the week . . . where Mrs. Burch has been since the first part of the year. . . . Will fly back in two weeks and then fly down again after two weeks up here and then drive back about the 1st of March. This has been my regular program for several years. . . . J. M. Burch, Jr." "Thanks for the Kodachromes. They are a reminder of a most enjoyable time last June. . . . If you are ever out this way be sure to look me up. . . . My best regards to all of the Class. Ralph L. Batchelder." (from Pasadena, Calif.) "Much pleased to receive the fine colored photos. . . . They are very nice indeed. Brings back pleasant memories of our stay there. . . . Dick Collins." ". . . They make a very nice memento of a very enjoyable week end and we shall all have to look forward to our next. Harry C. Lord." "I was perfectly delighted to receive . . . the very good kodachrome print taken on the Oyster Harbor Golf Course, although I regret that more of the fellows including your good self were not members of the group. Please accept my thanks for your thoughtful generosity in sending it along as well as my compliments on your photographic ability and the very effective instructions in French which you placed on the envelope. H. A. Rapelye." "I thank you very much for the colored pictures you sent me. . . . Apparently, as far as I can find out, I was the only person who took colored pictures at our reunion, and to be frank, I was very much surprised to find they came out as well as they did. . . . Bernard Leslie." "Thank you . . . for the two Kodachromes . . . taken at Oyster Harbors last June. I asked Nick Carter some time ago if it would be possible to get any pictures of the Outing. . . . Franklin T. Towle."

We report the following changes in addresses: Monroe Ames, 253 Forest Street, Medford 55, Mass.; William F. Grimes, 3318 Maine Avenue, Long Beach 6, Calif.; Joseph T. Mohn, 170 Claremont Avenue, New York, N.Y.; Wilfred A. Morris, 4629 Curry Road, Whitehall, Pittsburgh 27, Pa.; Arthur K. Poor, 25 Cedar Street, Marblehead, Mass.; Charles M. Steese, Harrison, Arkansas; E. Russell Willson, 30 South Oak Street, Hinsdale, Ill. — H. LESTON CARTER, *Secretary*, 60 Batterymarch Street, Boston 10, Mass.

## • 1909 •

The replies from the reunion post cards not only show that we can expect a substantial number at Osterville, but everyone seems most interested and some are coming from distant places. For example, we have had favorable replies from: Garnett Joslin, III, Mexico City; Delos Haynes, VI, St. Louis; George Wallis, II, Chicago; Jack Moses, VI, and B. Edwin Hutchinson, III, Detroit; and John Stevens, I, Washington, D.C. Before this reaches you there will be further information from the reunion committee, for Art Shaw, I, Henry Spencer, II, George Haynes, VII, and the others are working continuously on the plans and specifications. Incidentally, Art

Shaw has been elected president of the Northeastern section of the American Society of Civil Engineers.

Molly, XI, Johnny Willard, II, and Paul have received some very favorable reactions from their appeal to increase the class fund. They hope, however, to hear from a large number who have not as yet replied. It is planned to make a complete report at the reunion. The following geographical representatives are assisting the committee and will be glad to supply information and other help: Boston and vicinity, George Bowers, I, and Jim Finnie, VI; eastern Pennsylvania, southern New Jersey and Delaware, Phil Chase, VI; northern New England, Horace Clark, I; Massachusetts and adjacent areas in southern New England, Jim Critchett, XIV, and Ben Pepper, I; Connecticut, Bob Keeney, III; District of Columbia and adjacent areas in Maryland and Virginia, Ed Merrill, I; Pittsburgh and adjacent areas in western Pennsylvania, Joe White, XI; Cleveland and adjacent areas in Ohio, Morse Rew, I; Detroit and adjacent areas in Michigan and Ontario; Jack Moses, VI; Chicago and adjacent areas in Illinois and Indiana, George Wallis, II; California, Oregon and Washington, Ed Riley, VI; Texas and adjacent areas in the southwest, Paul Lord, III; Tennessee and adjacent areas in the south, Nelson Harrub, XI; Florida, Lewis Nisbet, I.

As a result of the class fund activities, Molly has received another interesting letter from Art Morrill, XI: "I am figuring on staying right here in Shanghai for a while. We, in the World Health Organization, guilelessly think that we can carry on our work, 'even if there should be a change in government.' This gentle phrase is a local euphemism meaning 'when the Communists come to town.' With your friends you don't have to be so indirect. But with strangers, who for all you know may be right-wing members of the Kuomintang, it is considered the thing to be more tactful. We have considered leaving Shanghai and a month or two ago were verbally invited by a government representative to go to Canton, but things look better now than they did then. There is an American cruiser sitting in the Wangpoo for us to hop onto in case looters start taking the town apart, but we now think that there is little danger that it will come to that. There must be a million desperately poor people in Shanghai and a million soldiers within easy range. If in defeat the system of feeding and controlling the soldiers broke down, it wouldn't be so good. Most people are not much disturbed about any immediate danger after the Communists come in. The question is what might happen before they get control, if they had to fight their way in. But now the peace negotiations seem to be making progress.

"I joined the World Health Organization in November, 1947, and came back to China to continue the work on municipal water supply and sewerage that I had previously done through the United States State Department. In each case I was detailed to the Chinese Ministry of Health. I traveled to several cities and we got some work started, partly through funds of the United States China Relief Mission, predecessor of the Economic Co-operation Administration. Then I traveled out of Nanking; but since August 1, 1948, I have been four days a week in Shanghai. I never lived here before and had a low opinion of the place. They have an atrocious dialect and some of the folks can't understand my kind of Chinese. Still I am breaking down a little. It must be admitted that steam heat in your room, even if there isn't much of it, is an improvement in the middle of winter. My wife sent me only the first four lines of the letter of November 12, saying that the 40th reunion would be in June and that a committee was at work. Tell them to send me the tidings, although I don't think there is a chance that I will be able to go. If I can go to the reunion, it will be because I have been chased out of China, and I don't want that to happen.

"Since I came to Shanghai I have been acting chief of the China Mission of W.H.O. It is a small outfit. We have six or eight foreign health specialists, helping the Chinese Ministry of Health in various ways and spend a good deal of money on foreign medical books for China. Last year we sent 60 'fellows' to study abroad, mostly in the United States, at a cost of $300,000. Getting them selected, placed, processed, taught, supplied, and back to China was quite a job. Most of the placing was done by the W.H.O. office in New York. One of the complications of our Shanghai office is doing business in an inflating currency. The average increase in the price level since the first of September, 1948, has been 25 per cent per week."

We have received a communication from Carl Gram, Jr., whose address is 1235 Park Avenue, New York. He tells us that his "Dad is director of European purchases for Foster-Wheeler Corporation and is located in their London office. His address is Aldwych House, Aldwych, London, WC-2. The corporation is a designer and constructor of oil refineries, chemical plants, and so forth, and Dad went specifically to handle their program in connection with a completely new and very large refinery to be built in England for the Anglo-American Oil Company, Ltd., a subsidiary of Standard Oil Company of New Jersey. He expects to be gone three years and mother and my younger sister, Gloria, are planning on joining him this spring. On January 20 Anne and I transferred him to the status of a grandfather. We had a daughter, Anne Valiguet, who was named after her mother and my grandmother."

While Paul, V, made his trip around the world along in 1919, he spent some time in Java, and as a result he became closely associated with the Netherlands Government. He has served as a director of the Netherland-American Foundation for several years. The Foundation was organized under the leadership of F.D.R. and Dr. Van Dyke of Princeton about 25 years ago and several score, if not hundreds, of Dutch boys and maybe some girls have been brought to American colleges for courses here. A short time ago, Paul received a letter from the Consul-General, Dr. Koopmans, to come to his residence. With several others, Paul received at the hand of the Ambassador, Dr. Van Kleffens, a degree from Princess Wilhelmina, as she is now designated, after serving as queen for 50 years. So Paul is now a Knight of the Order of Orange-Nassau! He has a citation and a medal. We all congratulate him on receiving this high honor.

Paul has received the following letter from Derick Hartshorn, II: "Hartshorn, as you surmise, is an old New England name dating from about 1640 in Salem. The ancestor Thomas Hartshorn had eight sons, six of whom were killed by the Indians. The Derick came from my great-grandfather, Derick Sibley, whose progenitors also arrived in Salem about the time the Hartshorns did. I think it is a Dutch name. After leaving the Institute I worked for Ingersoll Rand, developing an electrolytic cell. I was then production manager at Gilbert and Barker's in Springfield, Mass. Leaving there, I was general manager of two woodworking plants in Maine. These were sold and I worked a short time as industrial engineer for C. E. Knoepel in New York City. When they closed up shop, I started to do consulting work on my own, but had only one client, the Darling Valve and Manufacturing Company, Williamsport, Pa. After my production job was completed I was persuaded to stay as chief engineer. In 1926 I had a chance to buy into the Wayne Agricultural Works in Goldsboro, N.C., where I remained for several years as secretary-treasurer and general manager. I was slated to be president when the crash came. I retired in the middle of the depression on condition that the then president would finance the business over that period. I returned to Springfield, Mass., and worked for several years as cost reduction and manufacturing engineer for Westinghouse. I left Springfield to become works manager for Babcock Printing Press Corporation in New London, Conn. After a few months, I found that the vice-president wanted to run the plant, which did not suit me. I resigned and went to New York to work on guns and war material, mostly at Cameron Machine Company, where I was assistant works manager. Later I saw the opportunity to buy the Troy Foundry Company, Inc. The foundry building belonged to New York Power and Light (gas plant). It seems that they had planned to build large oil tanks near the gas plant, but after the disastrous explosion at Texas, they decided to put them as far away as possible. Unfortunately for me, it was the foundry location, and our lease was cancelled. I felt inclined to retire, but hearing that they needed instructors at R.P.I., it appeared that I could fill the place marked Mr. X on the schedule. This is my second year at Rensselaer Polytechnic Institute. I teach manufacturing processes, manufacturing engineering (economics of manufacturing) and creative design."

Paul has received a letter from Charles T. Main, 2d, enclosing memorial biographies of his grandfather, the late Charles T. Main, and of his father, the late Charles R. Main, II, of our class. Charlie, 2d, states that he has been in the office of the Charles T. Main Company since February, 1946. He adds: "Marjorie and I recall a very pleasant time you gave Mother, Sam and us as your dinner guests in New York City when we were there during the war. Carl Gram was there that day. Hope your Class has the best reunion ever this year." Should anyone wish a copy of the biogra-

phies, we are quite certain that one can be obtained by writing to the company.

As a result of the letters being sent out by the class fund committee, Molly has received a reply from Beatrice Kelley, Peabody, Mass., stating: "I am very sorry to tell you that Mark died on February 2, 1948. He went to work as usual and fell on the street. We were married 37 years and the happiness and pleasant memories of those days will never fade. He was one man in a million, kindly, thoughtful, tireless in his efforts for his family, adored by four children and terribly missed by nine grandchildren." Mark was born in 1884 and entered the Institute from Peabody High School and took Course I. This note is the first inkling that we have had of the passing of Mark. No tribute greater than his wife's could possibly be given him. Although belatedly, the Class extends to Mrs. Kelley its deepest sympathy. — PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries:* MAURICE R. SCHARFF, 285 Madison Avenue, New York, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

## • 1910 •

It is with great sorrow that I have to report the passing of Philip Wentworth. Carroll Benton sent me the following notice of his death: "Philip M. Wentworth, sixty-one, vice president of Stone & Webster Service Corporation, 90 Broad Street, died . . . in the New York Hospital. He lived at 277 Park Avenue. Mr. Wentworth was born in Danvers, Mass. After his graduation from . . . Technology in 1910 he worked with several public utilities companies in the United States and Canada. He became southeast division manager for Stone & Webster in 1929. In 1931 he became vice president and division manager of the company's New England division. In 1939 he was transferred to the New York office."

Carroll again reported on the monthly luncheon in New York for February, which was held at Whyte's. Those attending were: Carroll Shaw, Gordon Holbrook, Howard Trueblood, Larry Hemenway and Harold Arnold. Karl Fernstrom phoned Carroll that he would be unable to attend.

Jack Babcock, who maintains one of the most popular professors' offices at the Institute for students and past students for his course, has been recently awarded the Clemens Hirschell Prize by the Boston Society of Civil Engineers for his history of the Society covering 100 years of existence. — Dud Clapp, who is president of the Deecy Products Company, has been made a director of the Cambridge, Mass., Chamber of Commerce. Dud has just purchased a new house and tried to have me consider taking over his present house, which is large enough for an institution.

During the past month I have met or talked with Dick Fernandez, who is with the Monsanto Chemical Company, Harold Billings, Allen Curtis, Harry Hale and Sam Cohen. I also had a talk with Al Huckins; he had just returned from New York where he had luncheon with Stuart Sneddon. I recently had luncheon with Hal Manson where we talked over the matter of our 40th reunion. We both hope that this reunion, coming next year, will be outstanding. I met John Gray recently and he was on his way to Bermuda for a short winter vacation.

On my last monthly trip to Williamsburg, Va., I went by automobile and had the best intentions of calling on or phoning classmates in the various cities I passed through, but my plans did not work out. However, I had a most enjoyable trip regardless of the fact I was kept extremely busy on the new work for the Williamsburg Restoration, for which my firm has been retained as consulting engineers for the past 22 years. — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston 8, Mass.

## • 1911 •

Containing as it does a remarkably complete account of our history-making Convocation, this issue of the class notes will reach all classmates for whom we have good addresses — so a hearty greeting to you all! I want to assure you all that in my estimation M.I.T. now has as its leader one of the finest men ever graduated from it, and as a special attest of the confidence we have in James R. Killian, Jr.,'26, let's make 1911's contribution to Alumni Fund X, which runs from April 1, 1949, to March 31, 1950, our greatest to date — and we've always been right up with the leaders in all of the nine Fund drives to date. Extra support of the Alumni Fund is also a mark of approval of our Alma Mater's great endowment drive in which $20,000,000 is sought.

The Class has been signally honored by the choice of the M.I.T. National Nominating Committee of Bob Haslam, X, as nominee for a five-year term on the Corporation, to June, 1954, and of Luis deFlorez, II, for the two-year unexpired term of the late Al Browning'22, to June, 1951. And speaking of Monk deFlorez, you will all be grieved to learn that his mother-in-law, Mrs. Ellen A. King, who began her association with the Institute in 1891 and whom all of us remember from our undergraduate days, died at her home in Belmont, Mass., on March 4. She had retired from active service in 1933 and had been an honorary member of the Alumni Association since 1941. — Bob Haslam, by the way, left in late February for Brazil, Uruguay, Argentina and Chile, to be gone until mid-April. In acknowledging a congratulatory note on his nomination for Corporation membership, Bob wrote: "This South America trip will, I regret, mean that I will miss the wonderful Convocation. I have, however, secured from the Alumni Office the names and addresses of officers of local clubs in the four countries I am visiting, so I can, if possible, get in touch with them and see what I can do toward cementing them to the Institute."

Hats off to another classmate, for in early February our own Ralph Walker, IV, was one of 13 new members elected to the Institute of Arts and Letters. Membership in the institute is limited to 250 and it was organized in 1898 with memberships bestowed in recognition of outstanding achievement in art, music and literature. The biographical sketch accompanying the announcement, after telling of his education and the fact that he is a partner of the New York architectural firm of Voorhees Walker Foley and Smith, continues: "For the last 30 years he has been associated with a variety of architectural and engineering projects, including factories and laboratories, office buildings and banks, schools, hospitals and libraries, residences and housing for low-income groups. He has been especially active in the designing of scientific laboratories such as the Columbia University Cyclotron Labs and the University of Chicago Atomic Energy Laboratories. He has been particularly interested in town planning and is the author of "London, 1941" and "Humans + Materials = Architecture."

Under "News About People" in its February issue, *The Electrical World* has a two-column story titled, "Boston Edison Executives Assigned New Duties." In it was a fine new photograph of our Assistant Class Secretary, John Herlihy, II, who, as we told you in last month's notes, was appointed assistant general manager of Boston Edison, the while continuing his vice-presidential duties in charge of procurement, stores and service. A fine photograph of Bob Dillon'10, newly named vice-president, was also included.

Thanks to the alertness of Mabel Herlihy, assistant to the Assistant Secretary, according to her own statement, we had a postscript to last month's notes announcing the sudden death on March 1 of Tom McLaughlin, I, due to a heart attack. Tom left before graduation to enter Yale, where he had arts and law degrees. He had an office in Boston for real estate and law and at one time was assistant attorney general of Massachusetts under Attorney General Clarence A. Barnes.

Selly and Daisy Seligman, III, spent several weeks vacationing in late winter in California, and in a letter from Arrowhead Hot Springs Hotel, San Bernardino, Daisy sent two clippings, each with a picture of General George Kenney, II. George was at Santa Monica conferring with aircraft manufacturers in the area and, commenting on how rapidly flight training changes, told the press: "There is no place on earth that our bombers can't hit and return! Constant improvement in airplane design and performance, particularly the increase in speed, mean corresponding changes in the instruction of the men who fly. Fighter planes that can do 600 miles an hour cannot be handled by men who have been trained to handle 200-mile puddle-jumpers. Changes in tactics and strategy have been coming as rapidly as the increases in speed." George also told the press that the Air University at Maxwell Field, Ala., which he now heads, is similar to the Army's War College in that it is the country's main training center for staff-level commanding officers in the Air Force.

Carl Ell, XI, President of Northeastern University for many years, was principal speaker at the annual meeting of the Newton Community Chest in Norumbega Park, Auburndale, in early March. Criticizing reports of the President's commission on higher education, which calls for education for all youths not now being

educated, Carl said: "Education should be for those who have interest, capacity and ambition. The so-called college experience of two or more years is not a guarantee in any degree that the 'American Dream' will come true for all students," he stated. In furthering his point, Dr. Ell maintained that "the trained mind can be equipped to do evil as well as good."

Howell Taylor'14, 500 Packard Street, Ann Arbor, Mich., is fostering a fund for a living tribute to Mrs. Richard C. Maclaurin, widow of that wonderful man who came to head M.I.T. in the exact mid-period of our four years there, who still lives in Boston. A bronze bas-relief is proposed and all classmates are urged to send contributions to Taylor so that 1911 can have a good representation in this tribute to a fine lady.

Two of our metropolitan, energetic executives had hospital experiences in February, but it's fine to report that both are well and the better off for the ensuing rest and relaxation. We refer to Bill Orchard, XI, President, Wallace and Tiernan Products, Belleville, N.J., and Rufe Zimmerman, IX, Vice-president, U.S. Steel, New York City.

Had a nice letter recently from Henry C. Davis, VI, Colonel, recently retired from active Army life and living at 4526 Eighth Street, Riverside, Calif. After active service in World War II, according to Doc: "Was peacefully in command of the Harbor Defenses of Los Angeles when a telephone call from the Sixth Army said to expect orders in a day or so. Six days later I was flying to Peiping via Honolulu, Johnson Island, Guam, Iwo Jima, Tokyo and Shanghai. I was there for 14 months (Peiping) trying to get the National Government and the 'Commies' together. Knew General Li Tsung Jen, present president pro-tem; General Yeh, who recently took over Peiping; and the Gismo. All very interesting but completely frustrating. When the mission closed in March, 1947, Mrs. Davis, who had joined me eight months before, and I flew down to Shanghai, Nanking, Hong Kong and Bangkok, Siam. Then back to Shanghai — boat to Macao, the Portuguese possession, and return, then by ship to Okinawa, Lubic Bay (north of Manila), Manila, Samar, Guam, Honolulu and San Francisco with stops long enough at each place to get a good look. Then to duty in the Pentagon until June 1, 1948, when I retired. Now I have lots of fun doing the things I've always wanted to do but couldn't in the Army."

We wrote to E. E. Besse, II, when we heard that he had left the Wamsutta Mills after lo! these many years and finally got a reply from him. Writing from the Daniel Webster Inn, Franklin, N.H., Cap said that when a New York group gained control of the Wamsutta stock all the old officers were out and he felt that if he had to start in all over again he'd rather get another job or retire. "I am now, for a while at least," he writes, "with the Turbine Equipment Company of New England as an installation engineer and right now am putting in all the equipment at the new Franklin water works automatic station. When this is finished, I have another to do in Massachusetts. I have two grandchildren now, both boys. I intend to keep my home at 36 Washington Street, Fairhaven, Mass.

That does it for this month, classmates, and now I hope to see a large number of you back at the Institute on Alumni Day, June 11 — get it, Eleveners on the 11th of June! Now please reread that first paragraph. Thank you. — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

## • 1912 •

The big news of the Class this year is the extra reunion to be held at the New Ocean House, Swampscott, June 10, 11 and 12. As has been previously reported, those attending the 1947 event at Osterville found so much pleasure and satisfaction in greeting their classmates again, that a group at the Alumni Day meeting last June thought it was too long to wait until the next regular date in 1952 for another get-together. At their request, a canvass of the Class was made which showed that the probable attendance this year would at least be equal to 1947. Hence, the decision was made to go ahead. A. R. Davis and E. W. Davis, the committee appointed by Fritz Shepard, considered that holding the reunion at Swampscott would make it possible to attend Class Day at the Institute, which could not be done if the place chosen were on the Cape. It was thought this would prove very attractive to a great many who wish to meet Dr. Compton and Dr. Killian at the reception. The program as now outlined provides for gathering at Swampscott on Friday, June 10, Class Day at M.I.T. on Saturday, including lunch at the Great Court, inspection trips and reception in the afternoon, Stein-on-the Table dinner at the Statler in the evening and more good times at Swampscott on Sunday. Now is the time to renew your ties at the Institute and your friendships with your classmates. We are reaching the age when these things mean more than ever before. There is still time to arrange to come. All you need to do is to drop a line to Albion R. Davis, 11 Vane Street, Wellesley, Mass., saying that you and your wife will be there and make your own reservation at the New Ocean House, mentioning 1912. *Do it now!*

Another noteworthy development of the past two years has been the renewed interest in the class notes in The Review, as shown by the great increase in the amount of material published. This was brought about by the constructive discussions at the 1947 reunion, the more systematic attempts to obtain news and the appointment of Lester M. White to assist Fritz Shepard in this work. Further interest will only come about when every member of the Class drops a note to Fritz Shepard or Les White from time to time, telling about his business and other activities, his family, hobbies and so on. We can only report the news we receive. How about a word from *you*? — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston, Mass. LESTER M. WHITE, *Assistant Secretary*, 4520 Lewiston Road, Niagara Falls, N.Y.

## • 1913 •

We have a nice collection of letters from classmates for this May issue, which is fortunate for it will go to some 30,000 persons, including all of those on our mailing list. Here goes, with a minimum of comment, for your reading pleasure: Lammie Lemaire, III, by all odds the "Winston Churchill" of 1913, wrote to Bill Mattson: "Geoff Rollason wrote me that you had organized and run the reunion, and it made me very envious to think of you all swapping old reminiscences, and recounting new experiences. Geoff, no doubt, will have told you that I bought a small pastoral property of about 2,000 acres, with the idea of building a nice home on it and retiring. Unfortunately, my wife has suffered for some years from an incurable heart trouble, and although she has been free from attacks for some time, almost immediately after I bought the place she got very ill again, and three doctors agreed that she was never to live up there. The consequence is that she has been living in Melbourne for the past year and I have been up here and really the game is not worth the candle. The consequence is that my pipe dreams will have to go over board and I will have to go back to the city where my wife can get the necessary medical attention as required. I am hoping against hope to be able to get over to America one of these days and call on some of my old confederates. How I revelled reading the names on the class letter. I remembered nearly all of them; how can I forget? There is no doubt my spiritual home is Technology, and a thousand greetings to you all coupled with my best wishes. It was great to see Effie's signature, particularly as my own daughter is a graduate in engineering science and bachelor of mechanical engineering of Melbourne University, so far the only woman graduate out here in engineering."

Charlie Walton, VI, too, wrote Bill from Hollywood: "Rather than fail to write all of you good friends (there were over 50 on the recent trip) we are going to send one letter to all of you. Please read between the lines all of the personal intimate features of our friendship that apply particularly to you. Our recent trip to Boston and New York gave us the greatest happiness and pleasure we have ever experienced on any trip. That hurried trip reminds us of Ralph Waldo Emerson's essay 'The Over-Soul' in which he says in effect: 'How often in our daily conversation with our neighbor something higher in us overlooks the by-play, and Jove nods to Jove from behind each of us.' Many times on our trip we met friends, talked with them on the phone, or visited them, and while our conversation may have appeared trivial, Helen and I felt the delicious quality of true friendship that made us glow with pleasure."

Phil Burt, VI: "Sorry that I was not able to get to the reunion last year but things piled up so that I could not make it. I did go in to the mid-winter Alumni reunion at Walker but there were only four of us there at the table reserved for '13. I believe they were A. L. Brown, B. L. Cushing and E. E. Jewett. I am still at

Wellesley College; purchasing, that is. I do not see many men of '13 these days though I do keep in touch with M.I.T. through our local Wellesley M.I.T. club. We have monthly meetings during the winter and have had some very fine speakers from the Institute." – Hildy Carlson, VI: "Took a three weeks' vacation, finally, last September. Flew from Boston to Stockholm via Iceland and Copenhagen. Spent three days in Stockholm and about seven days touring Sweden. Then to Denmark by ferry and left Copenhagen by air for London. Covered over 800 miles in England by car and, believe it or not, actually went to church in Westminster Abbey. I found that a United States citizen equipped with dollars is welcomed everywhere with open arms. Food was good although not scrumptuous, except perhaps in Denmark. Returned to Boston exactly 21 days from take-off time. If one is limited for time, air travel surely helps out."

E. M. Bridge, IV: "After 15 years of divided energy between part-time assistant professor at Technology in the School of Architecture, and my practice of architecture, I decided for many reasons three years ago to resign my connection at the Institute and concentrate on my profession. This decision has proved to have been wise, and my office at 131 State Street, Boston, is very busy with a considerable variety of work. Associated with me is my son, Richard, who graduated from the School of Architecture at Technology in 1942. He spent three and one-half years in the Army in England and France, returning as a captain. We are engaged in substantial work for some 17 churches located through New England from Norwich, Conn., to Waterville, Maine. In addition, we are handling a number of fine houses, municipal and commercial work of considerable extent. My wife, Caroline, and I have succeeded in raising a family of three fine children, all of whom have graduated from college. My older daughter, Marjorie, is a research librarian in Radio City, New York, for *Time, Life,* and *Fortune.* My younger daughter, Olive, is married and is a librarian in the catalogue department of the Worcester Public Library. With all other Alumni I am intensely interested in the vast development at Technology, proud of its tremendous contribution to the war effort, and enthusiastic about its enlarged significance in the life of America." – John B. Woodward, Jr., II: "Principal activities: President and General Manager, Newport News Shipbuilding and Dry Dock Company; President, 1949–1950, Society of Naval Architects and Marine Engineers; Director and Deputy Chairman, Federal Reserve Bank of Richmond; Chairman, Commission to study Va Retirement Act; Member Executive Committee, Advisory Council on Va Economy; Trustee, University of Richmond."

Ad Cardinal, XI: "Sorry I couldn't get to the reunion this time but between clearing up the old homestead in Paterson and preparing to move here to Nutley where I bought a much smaller house with room to fuss in a garden and so on, I just did not have the time. I'm still traffic manager, with other jobs included, at Hoffman La Roche, Inc., here in Nutley. I had a nice visit with my old roommate, Gerry Lane, in Rochester, N.Y., last spring, and a very interesting trip through Eastman Kodak with him, where he is assistant general manager, after which we spent the evening together at his home, and dinner at a golf club he belongs to." – J. B. MacNeill, VI, Manager, Switchgear and Control division, Westinghouse: "I visited Technology on February 5 to talk with a couple of boys about industrial work, and spent some time with Professor Tucker and Professor Hazen. It is always stimulating to get back to Cambridge and see the remarkable progress that has been made since you and I were in school. At that time, you will remember, we had had good news of a mysterious Mr. Smith, who became known only after we had gone. The expansion program at the Institute indicates that many 'Smiths' have joined the clan, and the result is an Institute of which all graduates can be proud. I only regret that I am considerably farther away from it than you are and do not get back as often." – J. W. Brooks Ladd, I: "I am still with the Bard-Parker Company in Danbury, Conn., trying to keep order in the engineering department. It used to be fairly peaceful making surgical knives. Then came the war with gun parts, and now we are all mixed up with radar and television parts, not to mention small model airplane engines. At least there is plenty to do."

Victor Mayper, I: "If you want notes, I can tell only of Victor, Jr., who is in his 2d year of the M.I.T. Graduate School working for his Ph.D. in physics, and helping out as a research assistant in the laboratory. Age 20." – Henry W. Dew, III, from Jacksonville, Fla.: "I remain at the old stand. My principal work is vice-president in charge of sales of the St. Joe Paper Company. With my wife and five children, three now away at school, I am leading a comfortable life and enjoying the sunny clime of Florida. If any classmates come this way, I will be glad to see them. They will find me in the telephone book." – Bob Bonney, X: "Have sold my New Jersey place and reside at Green Haven Farm, on the Elk River, Oldfield Point Road, Elkton, Md., eight miles off U.S. route 40. Visitors welcome." – Dave Stern, V: "Still grinding out tin cans. Enjoy Rotary activities, and devote most of my 'non-working-for-a-living' time to the Jewish Memorial Hospital. Both children are married. Daughter has two children. Son has no children, yet. He was a captain in the Air Forces. I am on the board of governors of Can Manufacturers Institute."

Ken Franzheim, IV: "We are still carrying on here in a quiet sort of way. The American Institute of Architects had its annual convention in Houston in March, and it fell my lot as president of the Houston chapter to take over the responsibility of this and the post-convention tour to Mexico. I do hope that if any of the old gang get down this way, they will be sure to let me know, as I would be delighted to see them again and get some firsthand information." – Clarence S. Roe, I: "Mrs. Roe, our daughter, Bernice (we have three at home), and I take off for Florida February 1st. On March 16 we will sail for South America and expect to be back in New York May 4." – Marion Rice Hart, X: "I learned to fly in 1946 and spend most of the nice weather burning gasoline. I think that a company that makes a successful 125-horsepower and 165-horsepower engine should be able to produce a 145 horsepower unit that will hold together until it reaches its destination. I think that producing a muffler that doesn't crack every few hours should not be beyond the reach of the famous American 'know-how.' " – Hop Hopkins, IV: "I am dividing my time between the ranch and airport at Davis, Calif., and southern Calif. Fly my own Beechcraft Bonanza now instead of using an automobile." – Clarence Berry, VI: "This is the time of the year I begin thinking of getting my boat out of moth balls. I enjoy just playing around on it. Keeps one out of mischief. I moor my Matthews *Sea Jay II* on the Severn River, and Chesapeake Bay is really handy. The Bay is a wonderful body of water for cruising."

Ralph Rankin, VI: "For the past five months I have been in Washington taking over for one of our men here who has been ill and off the job. Consequently, I get home to Port Washington only on week ends and, being out of New York, haven't seen any of the classmates I normally see there. Family are all well and happy. Peggy was married in December, 1947, and is now Mrs. W. E. York and lives in Durham, N.C., where she is editor for the house organs published by the Erwin Mills. Jean is at home with us with her three-year-old daughter but she is to be married again on April 2. You may remember that her first husband (Lieutenant R. L. Hollis) was a marine fighter pilot who was killed during the war. Connie stays well and full of activity as usual. Her mother, now 87 years old still lives with us – so you can see that I am well cared for by four generations of charming femininity!" – Art Hirst, V: "What's the matter with '13 Course V men? Although we had few members, we have lost Ferd Pendelton, Arthur Bellis and Tenney Davis, all swell fellows, through death. Perhaps we pure chemists were too pure to last, or is it because of old age? Having been in the textile industry for 30 years, I should have passed out long ago, but now that I am out of it perhaps I shall last a little longer." – Howard Currier, II, Chief Engineer, Ford passenger car division: "Had a nice telephone visit with Eddie Hurst not long ago, on his last trip to Detroit, and hope he can spend some time here on the next trip." – Jack Horsch, XIV: "Am a grandfather of about two-and-a-half-years' standing. This is not so painful in realization as it may have been in anticipation, particularly since our grandson happens to be the best one ever! As part of our recreation these days, Gertrude and I belong to a square dance club that meets each fortnight. More vigorous than our old-time waltzes and two-steps, and quite relaxing, this activity also has made possible pleasant contacts with an almost entirely new set of persons, most of whom we would not have met otherwise. With retirement about six years away, I am developing a practical

hobby which I expect to be able to pursue, and thus avoid becoming idle, when that time arrives." George Dempsey, X from Boston: "I sold my shoe manufacturing business in June, 1947, but the retirement didn't appeal so went back in the shoe business as sales manager, consultant and so on."

Harold Crawford, IV, from Walla Walla, Wash.: "Hope to see you in '53. Better come out sometime and see where we make atomic bombs." Geoff Rollason, X: "Am still busy commuting between Chicago, Pittsburgh and New Jersey but maintaining headquarters and residence in New Jersey. Had a nice letter from Lammy Lemaire who greatly appreciated the 'round-robin' greetings we sent from the reunion." — Burton Cushing, II: "Leading a quiet, happy, and, I hope, useful life as head of the science department at East Boston High School. At present I am chairman of a committee to revise the physics and chemistry outlines for all high schools in Boston. Mrs. C and I are having lots of fun with our two-year-old granddaughter who lives with our son and wife just around the corner." — Stan Parker, III: "Still in the Steel Warehousing business in Chicago and in good health but slowing up. Gave up my country home a year ago and moved back to Evanston. Principal hobby at present is traveling, and manage to get in a couple of good trips a year." — Good old Jim Beale, XI, very laconic like: "Things that I do: Curse the government. Curse taxes. Curse snow. Things that I think about: Having definitely gone 'over the hill' I'm paying a doctor $300 to get the idea out of my head." — Jerry Lane, V: "Am still plugging along at Kodak Park Works of Eastman Kodak Company. Last week my second grandson arrived which makes me realize the number of years that have passed since M.I.T."

Frederic R. Barker, II, died on February 25, 1946, and Charles R. Hill on December 1, 1948. Professor Tenney L. Davis was stricken in his automobile at Norwell, Mass., on January 25. I had the following beautiful letter from his wife, Dorothy: "Perhaps by now you will have heard of the sudden death of my husband. He had been at home for dinner as usual and after a short nap, and apparently in the best of spirits, had left again for the afternoon's work at his laboratory at the plant of National Fireworks, Inc., in West Hanover, a distance of only eight miles. Hardly half an hour later the news was brought to me of his death and the shock was great. He suffered a coronary thrombosis seven years ago and had retired to live in the country, but during the war he was able to direct research at the plant of National Fireworks principally because of its nearness to our home and also because he was able to get all the extra rest that he required in order to carry on. He was left with angina following the coronary and he was physically unable to do many of the things that would have given him much pleasure. The angina had become much more troublesome and worried him, but he tried to believe that with good care it might lessen. He was a wonderful companion, kind, considerate, and generous, and he was blessed with a quiet sense of humor that endeared him to his close friends. I shall miss him more than words can tell but for his sake, I do not regret the manner of his going, without any long suffering." — FREDERICK D. MURDOCK, *Secretary*, Murdock Webbing Company, Box 788, Pawtucket, R.I.

## • 1914 •

There have been but few times that it has been possible to address the entire Class through these columns. This is one of those times. Ordinarily The Review goes only to those who have made some contribution to the Alumni Fund. This seems fair as it costs about $5 per year for sending The Review and for other expenses incidental to the operation of the Alumni Association. That all may share in the great Mid-Century Technology Convocation, this issue of The Review goes to all former students whose addresses are known.

While referring to the Alumni Fund, your Secretary would like to mention the great generosity of our Class Agent, Ross Dickson. Ross conducts his solicitations from his home evenings at a real sacrifice in personal time, and more recently under difficult circumstances because of family illness. No one soliciting funds has an easy task. Yet Ross has again led our Class over the top for another year, both in number of contributors and in amount raised. These alumni contributions are far more than a duty. Nebulous and intangible as it may seem, every alumnus shares in the success and well-being of the Institute. Today it stands in the lead of privately endowed scientific and engineering institutions. Through its instruction and research, we have today a better country in which to live. The closer we are to its program, the more we benefit from it, and it is hoped that each year every classmate will send in his bit. Fifty dollars each year for 10 years is the same as $500 once every 10 years. This regular annual contribution is the basis of the Alumni Fund. A new Fund year started on April 1. Make your contribution as generous as possible — but at least send something so as to receive The Review regularly.

There have already been several mailings pertaining to our 35th reunion. Because of this, little space will be taken here to detail plans, but if you have not received your copy of the class directory and other literature just drop a line today to your Class Secretary or Assistant Secretary. The reunion will be held at the Sheldon House, Pine Orchard, just out of New Haven, Conn., June 17 to June 19. If you have not already made your plans to attend, do so today. Time steadily marches on, and since the last reunion we have lost by death our Class President, Buck Dorrance, as well as a large group of other 1914 men. Come and enjoy a pleasant visit with your classmates — another reunion may not find as many present.

Now for some current class notes. J. Warren Horton, who for a considerable number of years past has been associated with the Institute as a professor in the Electrical Engineering Department, has resigned to join the Government Underwater Sound Laboratory at New London, Conn. Had one not followed Horton's work, this might come as a surprise, but it really is his third association with this work. He was one of the staff working on submarine detection during World War I. After the war he returned to Bell Telephone Laboratories and was associated in work on various sound problems. Later he transferred to the Institute, joining the Department of Electrical Engineering. In the spring of 1941 he was asked to join the staff of what was known as the Columbia University division of War Research and which has now become the Navy Underwater Sound Laboratory. Nearly all of this work was done at New London and great advances were made, particularly in the field known as "sonar." At the close of the war, Horton returned to the Institute and has been devoting a very large part of his time to instruction work associated with the program for Naval officers, in the general field of sonar and electronics. As New London is but a short distance from Pine Orchard, we hope that Horton will be with us at the reunion to tell some more about his work.

A nice letter has been received from Arthur Todt of San Francisco. Like some of the others on the West Coast, he writes that he does not feel it is going to be possible for him to cross the continent to attend the reunion, much as he would like to be there and meet many classmates whom he has not seen since graduation. Todt writes that his work with the Standard Oil Company, where he has been specializing in various phases of marketing facilities, is most interesting and keeps him very busy. He also says this work has brought him in contact with many other Institute Alumni who are associated with the company.

Gerry Blakeley made the front page of the local newspapers the other day because of incidents involved with his automobile. He left his car in Cambridge on Friday evening, at which time it was stolen. It was resold twice on Saturday and then recovered by the Police on Sunday in Hartford, Conn., very little the worse for its rapid transfers. Gerry's daughter, Jean, was married Saturday afternoon, March 19, to John Whitman of Cambridge. The wedding took place at All Saints Episcopal Church in Belmont, which is Gerry's home town.

The Institute of Radio Engineers at their annual spring convention awards the grade of Fellow to a limited number of members whose work has been outstanding through the years. Included in this year's awards was Herman Affel, long known to 1914 men for his fine work at the Bell Telephone Laboratories, quite aside from being the official photographer at our five-year reunions. — A note from Leigh Hall came from Sarasota, Fla., telling us that he is down there with Mrs. Hall for the winter. He will be back well before our reunion and is planning to be on hand, as has been the case in past years. Leigh inquired whether or not ladies would be included this year. The answer is, no. The Class agreed that the ladies should be present at our 5th, 25th, and 50th reunions. We enjoyed having them with us on the two previous occasions and are looking forward to seeing them again on the 50th, but the intervening reunions are strictly stag.

Art Peaslee, who comes pretty close to holding the record for desire to travel, is off again on another jaunt, this time taking him to South America. He has written your Secretary from Rio de Janeiro, Brazil, stating that everything was under control and that he expected to be back in plenty of time for the June reunion and certainly was going to be on hand. – H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. C. P. FISKE, *Assistant Secretary*, 1775 Broadway, New York 19, N.Y.

## • 1915 •

Although the details of the famous Mid-Century Convocation are well described elsewhere in The Review, we of 1915 want to congratulate and thank the Institute officers and staff and their committees for the splendid and efficient jobs they all did in making this such an outstandingly successful, interesting, and impressive occasion for us all. Our pride in M.I.T. now knows no bounds.

Classmates and their families gathered from all over to attend. Of these, 67 came to a class luncheon at the Hotel Lafayette in Boston on Saturday, April 2, following Jim Killian's inauguration. Barbara and Virginia Thomas, our ever reliable standbys and help in need when parties for ladies are held, presided at the luncheon and did a grand job of welcoming everybody and helping us all to enjoy this renewal of friendly class contacts. There were dinner parties and hotel-room parties before and after on Thursday and Friday evenings and even on Saturday, after the luncheon, groups continued on at various places. Surely, a delightful time for all the classmates who attended!

As the Alumni Fund opens its tenth year it's our chance to put 1915 over the top again. Inspired by the Convocation, you should send your checks in early – at least as much as last year – maybe a little more. There will be no "high pressure" solicitation – just the usual friendly urge for such a worthy purpose.

To equal our all-time attendance record, 34 classmates and their guests attended a Boston class dinner at the Boston Yacht Club on March 25. These dinners have become famous and this one in no way let that standard down. At the next dinner in Boston and New York there will be announced definite plans for our 35th reunion in June 1950 (oh, my!) and Gene Place's program for "$50,000 for 1915 in 1965." With the usual amount of heckling and interruptions we got through the dinner and business of the evening to hear Wilfred J. Sirois, Technical Sergeant in charge of the Photographic Laboratory of the Massachusetts State Police give an illustrated talk on "The Camera and Photography in the Scientific Detection of Crime," which was amazing and impressive, with a lively discussion period following. Sergeant Sirois's talk proves more forcefully than ever that "crime does not pay."

The long-distance prizes went to: John Homan, Beverly; Whit Brown, Concord; Fred Waters, Marblehead; Max Woythaler, Framingham; Loring Hayward and his two sons, Taunton; and the winner, Clyde Mackenzie, Providence. – Guests were: Sergeant Wilfred J. Sirois, Massachusetts State Police; Jim Tonra, Chief of Police, Brookline, Mass.; Captain Eddie Maher, Cambridge Police; Jack Mohr, M.I.T., 1950; Howard Morrison'14 (Archie's brother); Ken Young'35; Horatio W. Lamson, Jr. (Horatio's son); Francis E. X. Murphy (Frank's son); Loring F. Hayward and Robert R. Hayward (Loring's sons).

Classmates present were: Whit Brown, Sam Eisenberg, Viking Enesbuske, Donald Fowle, Fannie Freeman, Seward Highley, John Homan, Frank Herlihy, Wink Howlett, Clyde Mackenzie, Archie Morrison, George Moulton, Pete Munn, Frank Murphy, Johnnie O'Brien, Pirate Rooney, Henry Sheils, Ed Sullivan, Max Woythaler, Louie Young, and me.

Yours for M.I.T. and 1915, more than ever. – AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

## • 1916 •

The response to our request for news for this special edition was tremendously gratifying. So here we go without any further ado. Eddie Ekdahl spent several years after graduation in Shanghai as a plant expansion engineer. He writes: "Was up in Boston for the holidays after having spent two weeks in the hospital and am back here again for a brief week. This is all the result of an unfortunate fall I had last April while inspecting a job *so no one would get hurt*. Fell three feet only, caught my leg on a hand rail and put a torsion twist on the left limb. Recovery and reuse of leg were splendid but infection flares up periodically. Have been here in Texas five years as consultant and industrial development engineer for the Tesco outfit. Work here is largely development of mineral resources of the southwest, so I've become something of an authority on minerals and muds of Texas. Pleasant work. See the country. Have written much on the resources of the southwest but mostly in an anonymous vein. Own a small ranch-style home and ten acres which I am trying to get beautified 15 miles out of Fort Worth. Son Dewey is finishing his last year of high school at Nyack, N.Y.; wants to be a commercial artist. I've grown old and gray but aside from my leg injury feel quite spry."

Another long unheard from who came through with a wonderful letter is Halbert H. Neilson, Colonel, U.S.A., retired. The retired after his name has been well earned. He spent nearly 31 years in the Army, 11 of them overseas, including Germany and Japan in both World Wars. He says: "After a few months with the Western Electric in 1917, I decided to forego pursuit of electrical engineering. Enlisted in one of the early aviation ground school courses at M.I.T. in 1917." After having one crash, Hal went on with a "more or less normal life" in the regular Army, with duty in the Philippines, on the California Coast after Pearl Harbor, and ending finally in Tokyo with the Army of Occupation. He was on military government duty there and for the last year was a member of the War Crimes Commission trying war criminals. He concludes: "Now I am a retired colonel, in excellent health, loafing and resting. I may get back to Boston again one of these springs for a class reunion."

If any of you wonder what you can say when we ask for news just read through the following from Pete Mahlman: "I am starting today my 21st year with the Carborundum Company. I am registered to practice before the United States Patent Office but I am not a lawyer. Son Bill, bachelor's from Michigan, served not quite five years in the Army, discharged in 1945 just in time to be admitted to Technology as a graduate student in the Physics Department. He is located with Linde Air's research in Tonawanda. My other child, Elizabeth, also bachelor's from Michigan in 1943, is now married and settled in Birmingham, Mich. Have three grandsons, oldest four last September and the other a double header that arrived in July, 1946. My wife and I both enjoy puttering around dangling lures at fish and get much enjoyment from bridge in the off-fishing seasons. Chet Richardson and Ray Brown, two other classmates of Course XIV are located in this neighborhood. We get together occasionally. I have tangled with Bill Kniesner in a struggle to determine whether his Norton man or my Carborundum man was there first with an invention. The latchstring at 44 Courier Boulevard, Kenmore, is always out for any of my old friends who get to Buffalo or Niagara Falls."

Flipp Fleming has been nearly 35 years with the Goodyear Tire and Rubber Company, both before and after graduation in both Akron and California. For the last 10 years he has been manager of general merchandise and materials control department. "Margaret and I are back to where we started, just the two of us at home. Our son, Bill, lives in Dallas, Texas, and is with Rauscher, Pierce and Company. Our daughter, Margaret, lives in Akron. She has a nine-months-old son which makes us doting grandparents."

Apparently the inexorable passage of time administered the familiar jolt to Leonard Stone this last year when both of his children took unto themselves spouses and flew the parental coop. He says: "However, this painless and comparatively inexpensive method of procuring an additional son and daughter is highly recommended. Nancy and her husband live only a few blocks from both originating nests. David is married and puts automobiles together for General Motors in Wilmington, Del. The old folks are thinking about a new nest for twilight hours on the beach at St. Croix, one of the Caribbean Islands, and recently visited a lot purchased from the enthusiastic description of friends. The visit duplicated the friends' enthusiasm; the lot is providing a very satisfactory peg on which to hang a dream."

George Steese, from out in La Jolla, Calif., is another one of those fortunate retired ones, but his letter would lead you to believe the opposite. "My retirement was involuntary," he says, "let us hope that no one in our Class has such aspirations. If there is, he should be warned that it is the hardest kind of work to avoid work. The following mild activities have kept me reasonably busy: Renting the house

and traveling for a month or two each year in the west, southwest and Mexico; raising periodically Scottish Terriers, Irish Terriers, Schnauzers and Dachshunds; taking sun baths and wading in the ocean and in the hot springs inland; inspecting oil and gas fields with my brother in Oklahoma and Texas; irrigating our lawns and gardens – loathsome drudgery; last but not least, raising a daughter. Our daughter, Anne Gifford, is now at Stephens College, Columbia, Mo. Possibly she will go, we hope, to M.I.T. or Yale for a special short course in architecture. My wife is from Boston and wishes me to take her to Switzerland. I may settle for British Columbia."

Howard Hands says he is still working for New England Electric System trying to induce more people to use more power. He goes on to say: "We've had to lay off a little on this activity for a few years but now that we are getting more boilers, turbines, generators and transmission material we have come to the point where we don't have to duck a customer if we know he wants to add another 10-watt lamp to his present load. Richard transferred from the Institute to the University of Michigan where he is taking engineering mechanics. We just spent two weeks in Florida."

Ed Hanford writes from Hammond, Ind., where he located with the Hammond Plant, Lever Brothers Company. He has just submitted to publishers the manuscript for his new book and as author and artist on the side, he writes: "I am fast becoming an amateur-expert on world affairs, and have just written a book expressing my humble opinions on the subject. For several years we have been taking courses under Dr. Joshi, a learned professor and lecturer on world conditions, who, born in India, studied under Clem Atlee and knows many of the persons you read about in the papers like Churchill and Nehru. I first became interested in these things from my contacts with Unilever officials who occasionally drop in at the plant and can furnish firsthand information on conditions in the part of the world they have been visiting. We are all lucky to be in the United States. My real hobby is oil painting, and I exhibit portraits and landscapes in the local exhibitions when I can find time to paint."

In similar vein, Elmer Wanamaker writes that he made a trip to Poland with two of his colleagues in the Electro Manganese Corporation of Knoxville. They inspected American-owned properties which had been operated for over 13 years prior to the outbreak of World War II. He says: "I can heartily recommend such an experience for anyone who has the slightest doubt regarding the desirability of our American way of living." His company has pioneered in the production of electrolytic manganese metal and was very busy during the war period. Fortunately, the same condition has prevailed since.

Harold Russell writes that he and his brother James, '13, run a boiler shop and were very busy during the war. Once in a while he runs into Emory Kemp. "I talk with Nat Warshaw" he says, "who is with the Market Forge Company. Our classmate, Tom Berrigan, who is chief engineer of the sewerage division of the Metropolitan District Commission has been selected by President Truman to serve on the Water Pollution Control Advisory Board." Tom, incidentally, lives in Westwood, Mass.

Harold Saunders is with the Bureau of Ships, Navy Department, Washington. He has worked in research and experimental activities having to do with the design of ships of the United States Navy and Merchant Marine. From 1940 to 1946 he was technical director of the Navy's David Taylor Model Basin; was director from 1946–1947, and now is engaged in writing a new book on the resistance, propulsion, and motions of ships. His main recreation is "Sailing with my children and their friends in a National one-design sailboat which they and I built in 1940. Maybe this is a good way of spending a busman's holiday, but I still like it."

Don Webster writes that he has been comfortably settled in the small village of Palmyra for the past 18 years. He is controller of the Garlock Packing Company in this New York town. – We have word from Norman Baker that as a major in the Ordnance Department he is now assigned to the Boston Ordnance District. – Marcel A. Gillis, Biloxi, Miss., another of these retired gentlemen, pens a brief note. He is a retired infantry colonel with 30 years service, has one grandson, and has served in both wars. – Withy Witherspoon is a Baltimore builder and real estate operator, where he has been since 1921.

Those of us who live in or around Bridgeport, Conn., or who read the May, 1948, issue of *Dental Digest* have probably heard of the work Dick Berger is doing on cancer prevention. After graduation he worked as a research chemist and experimenter for the late Thomas A. Edison and the Columbia Graphophone Company. He was in the first war as a lieutenant in the Navy and the second war as captain in the Marine Corps Reserve. He has spent much of the last 16 years on cancer research in his laboratory in Bridgeport. He started his cancer research as a hobby and it has since grown into a realistic battle. Dick has plenty of literature for those who would like more information on this subject.

Elbridge Devine has written us from Pelham, N.Y., and describes his work as being with a concern formed by two M.I.T. men, and "we try to keep pace with the various demands made by the printing trade. I get to Boston once in a while and generally manage to drive past the 'new' Technology. I have a nice family, one boy is a dentist with his own office in New Rochelle, a daughter is circulating manager of a radio magazine, and my other boy may soon be heard over the radio."

We get a number of responses to our inquiries indicating that it is hard to write any letters because there is nothing to talk about, and then the writer will continue to say he is president of a bank, or vice-president of some big manufacturing outfit. A recent modest letter from George Repetti falls in this classification: "I wish to acknowledge your several notes regarding items for The Review and would have answered previously if I felt there was anything of great interest to report. Several years ago Jack Burbank was out here and I remember that I was brought up to date at that time. You might mention that I am now president of the Exchange National Bank of Colorado Springs." See what we mean?

We have a brief note from Joe Fouhy indicating that he is now working for the Massachusetts Highway Department on highway construction engineering. – Dick Fellows is still with the General Cable Corporation, at Emeryville, Calif., and will complete 25 years with them this June. He runs into Jack Heller at the San Francisco club frequently. He says his family has increased since we last heard from him by one grandchild; he now has three, all girls. – Lewis Vose is with the Crompton and Knowles Loom Works of Worcester, Mass., manufacturers of textile machinery, and has been in this type of work since graduation. He has "played a little golf, done considerable salt-water sailing, and fooled around with wire-haired terriers. Have enjoyed myself generally. Have never found it convenient to attend any class reunion but perhaps will get around to it in 1951, if still here."

A clipping from the Boston *Herald* of March 12 shows Joe Barker with Dr. Compton, Dr. Killian, and Professor Bruno Rossi, at the time Professor Rossi received the Research Corporation award. Joe is president of the Research Corporation, and made the principal address at the award dinner at the Hotel Somerset on March 11.

Your Assistant Secretary might mention that he continues to have active contacts with Boston and vicinity with son Stuart a sophomore in electronics at Technology and daughter Dorothy a senior in art at Wellesley. Now, how about some of the rest of you who have neglected to write? Our thanks again to all of you for the wonderful letters for this column. – RALPH A. FLETCHER, *Secretary*, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York 14, N.Y.

## • 1917 •

You are all old enough to remember when the Harvard-Yale football game was a sports classic and the alumni of these two institutions used suddenly to acquire long forgotten friends in November of each year who desired tickets. Well, the Alumni of dear old M.I.T. at last attained that enviable or unenviable position, depending on where you are sitting, for the requests for tickets to hear the Right Honorable Winston Churchill were, we believe, far in excess of any demands for the abovementioned classic. To many of us, the final event, the inauguration of our good friend Jim Killian, without even a plain Honorable, as the tenth president of the Institute, will be fully as thrilling as the rest of the program.

We are advised by The Review that a copy of this convocation issue will go to all Alumni, even though they are not contributors to the Alumni Fund, so it seems a good opportunity to put in a plug for the 50-year class gift. Here is the score as of this date. Insurance policies in force, $70,-

000; in process, $4,000; pledged contributions to a pool policy for premiums to pay for $7,000; giving a total of $81,000. In addition, we have received cash gifts and pledges for the sum of $1,085, and have what we consider as fair prospects for additional policies totaling $30,000. Your committee feels that this is a fairly creditable showing but we hope to improve it soon.

Society items seem to have become a regular part of these notes. In this issue we are pleased to announce that Franklin H. Pond, son of Walter F. Pond, will be married to Barbara Jewell of Nashville, Tenn., on April 19. The happy couple will live in Kansas City, Mo., where Franklin will be with Black and Veatch, consulting engineers. The only fly in this ointment is that Walter's son didn't go to M.I.T. but to Georgia Tech, which we associate with some sort of raucous song. — Walter, incidentally, had a reunion with Lobby in March both at Monterrey and Mexico City. — Tubby Strout has been elected a life member of the National Fire Eaters Association and by the hard route. It seems that he was removing the paint from the walls of his bathroom; the paint remover became ignited and Tubby ended up in the hospital. We understand, and sincerely hope, that he will live; but he will never be the same, by which we mean that bonded prune juice will probably scorch his throat.

We are most happy to report that Lucius Hill is back in circulation. A sojourn in the south, topped off with a holiday in Canada (sounds like a hot shower followed by the traditional cold shower to us), has put him in the pink. He has resigned his position as director of housing for the John Hancock Mutual Life Insurance Company. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. FREDERICK BERNARD, *Assistant Secretary*, 24 Federal Street, Boston 10, Mass.

## • 1918 •

The precipitate of all these years since we graduated seems to have separated out a good many architects for immortalization in these columns. Not that their houses stand bleakly at attention while a soft May moon polishes the rooftops. It would be more realistic to say that said architects get into the newspapers, and we subscribe to a clipping bureau. Once more Ed Shields finds the pages of his life opening to record his selection, this time by the Belmont, Mass., Housing Authority, as architect for the local veterans' housing project. Present plans call for 25 units to shelter four families each. By the simple arithmetic we learned under Doc. Tyler on the second floor of the old Rogers Building, freshman year, that accounts for 100 families. The local paper describes Shields as "an architect of wide experience who is familiar with the operation of the state housing act." He is, so the clipping says, also a graduate of you know where, a naval officer of World War I, and head of his own architectural firm since 1926. Meanwhile, a hundred miles to the west, southwest, Robert B. Swain occupies his new home in West Hartford. The paper says "local general contractor has built a house for himself." It describes the place as "the utmost in livability" which we suspect are words right out of Bob's own vocabulary. There are, however, four enticing photographs and a floor plan to give substance to the claim. The house has solid eight-inch brick exterior walls, a slate roof over the front section and a flat roof, over the two-bedroom, ground-floor wing, which can be flooded in summer to produce cooling by evaporation. The floors are concrete, surfaced with asphalt tile, and contain wrought-iron radiant heat coils. The kitchen has a middle-of-the-room double sink to save steps, master bedroom with fireplace as well as glass block and tile stall shower. There are two more bedrooms upstairs, and downstairs what would be called a study by a professor but what is known as a den by the tired general contractor. To top it all off with just the right accent of ancestral voices, beside the fireplace in the living room stands a bucket bearing the name of Bob's great, great-grandfather, Jeremiah B. Howell, former governor of Rhode Island. "The house," says the paper in obvious imitation of the Architectural Forum (or is it Swain rounding out a sweet piece of free advertising?), "is surrounded by elm and hickory trees on a lot which measures 92 by 200 feet." Ho hum, the Swains used to live in a 15-room house on Bloomfield Avenue before they moved into this "utmost in livability."

Via architect Bill Wills comes this excerpt from a letter by Earl Richards, whose usual address is 400 South Front Street, Columbus, Ohio: "Besides the usual troubles of the publishing business, I have had the poor judgment to get myself involved in a number of extra curricular activities this year until I am so busy that I don't know which end is up. I am having fun out of one of them, however. I am building myself a house at Cocoa Beach, Fla., this winter. I let the contract when I was down for two weeks in November and expect the house to be finished early in April when I shall be going back again. It has been fun to dabble around in architecture a bit once more. Everything has been pleasant about it except the price. That is just out of this world. I am trying on myself what I used to recommend to clients without success. Get everything down on paper that you want, let the contract, and go away and don't come back until the job is finished. I am interested to see how well this works out. Of course, I have a good architect supervising it for me on the spot to see that the contract documents are followed."

In a series of articles about Waltham, the Boston *Herald* gives George Ekwall credit for 23 years as rector of Christ Church following his seven years as an industrial chemist for the Hood Rubber Company. George, so the paper says, holds the second longest pastorate in Waltham. At that, he has an impossible way to go to compete with the record of Parson Ainsworth of Jaffrey, N.H., who about a century ago completed 76 years of continuous service as minister to one congregation. We think that must be a world's record. — Our own Bill Foster serves the world as second in command of the Economic Co-operation Administration in Europe where he has been since last May. Whispers on the Washington wind say that he is shortly due for a promotion, too.

But through all this chronicling, death continues its steady tithing. On February 12, Bob Van Kirk died in Evanston, Ill. For three years he served as treasurer of the M.I.T. Club of Chicago, and for the five years previous to his last illness had been an Honorary Secretary. Since 1946 he had been seriously ill with an asthmatic condition which required hospitalization much of this time although he was able to carry on his business activities to a fair extent during the last year. Beside his widow, he is survived by three children, Alice Frances, Robert W., 3d, and Louise. — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

## • 1919 •

The 30-year reunion plans were announced as June 24, 25 and 26 at Norwich Inn, Norwich, Conn., starting with dinner on Friday June 24 and concluding with lunch on Sunday June 26. At the time of this writing 40 have already indicated that they will attend this reunion. Those who have not already decided to attend should consider how easy it is to get to Norwich, and how much satisfaction would be derived from visiting with some 50 to 100 of your old college classmates.

The Class wishes to congratulate and was very pleased to learn from The New York *Times* of February 11 and also the February 14 *American Chemical Society News* that Edgar Reynolds Smith was named to win the Hillebrand Prize this year. Dr. Smith prepared the first samples of heavy water. He was cited for his original work in physical chemistry, including contributions to electrochemistry and ebulliometry which is the precise measurement of the boiling point of liquids. Dr. Smith has also been recognized for his work by appointment to a number of important committees including the Committee on Physicochemical Data of the International Union of Chemistry, the Committee on Tables of Constants of the IUC, and the National Research Council Committee on Physical Chemistry. He served as president of the Washington section of the American Chemical Society in 1944. Dr. Smith is now chief of the physical chemistry section at the National Bureau of Standards, Washington, D.C.

Dr. M. C. Balfour who is now regional director of the Rockefeller Foundation, International Health Division, writes from Delhi, India, that he will be back in New York toward the end of April and will be on hand for our 30-year reunion. He was in China from August to December of 1948. — J. S. Coldwell announced the engagement of his daughter, Marjorie Johnson, to L. Gordon Hale, Jr. She was graduated from Northfield (Mass.) School for Girls and Duke University, 1948, where she was a Phi Beta Kappa.

Dave Sanford, Jr., has changed his address from Stamford, Conn., to Nearwater Lane, Noroton, Conn. Fred R. Hewes has moved from Storrie, Calif., to in care of R. M. Noon, Post Office Box 736, Los Altos, Calif. — Hy Selya is still with the Sagamore Color and Chemical Company. He

also has control of the Poughkeepsie Dyestuff Corporation, Poughkeepsie, N.Y., and has served two terms as president of the Drysalters Club of New England. – Edwin M. Pickop, 4815 Matsonia Drive, Honolulu, writes that 5,000 miles is too far to overcome for the reunion but he sends "Aloha" to his Course I friends and hopes the reunion is a success. – Ark Richards dropped a line to say that his company has just passed its 11th birthday and Lou Grayson writes to say that everything is going well with him in Washington. – EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York, N.Y. ALAN G. RICHARDS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

## • 1920 •

The only thing that can rival in interest, if not in brilliance, this great Mid-Century Convocation is our own 30th reunion which will be coming up sooner than you think, that is, in the spring of 1950. I have already had correspondence with our Class President, Norrie Abbott to get the planning for this great event under way and if you have suggestions as to time, place, or anything else that will add to its lustre and enjoyment, now is the time to tell us about them. What we have in mind, of course, is the good old Sheldon House at Pine Orchard because we have had such a good time there at several previous reunions and because of its accessibility for both the Boston and New York classmates. Let us have your thoughts and suggestions and recommendations to make the 30th the biggest and best year. You can write Norrie, in care of the Manufacturers Mutual Fire Insurance Company, Post Office Box 1485, Providence 1, or you can get in touch with me at the address below.

Welcome word has been received from Bob Sumwalt. Bob is dean of the school of engineering at the University of South Carolina, Columbia, and he has asked me to request any of the Class who are in his vicinity to get in touch with him as he would like to seem them. Bob says that his son, Bobby, will be graduating in June from the University of South Carolina with a B.S. degree in civil engineering and has applied for graduate work in that field at M.I.T. next fall. If he gets in, this means he will get his M.S. degree in June, 1950, and Bob is thinking of it in connection with our 30th reunion and is already planning to attend. This is good news.

Irwin Moore, President of the N.E. Electric System has been elected a director of the System. For ten years, Irwin was assistant to the president of the International Paper Company. In 1936 he was made president of the International Hydro-Electric System and he has been president of the N.E. Electric System since 1941. H. J. Green has left Providence and moved to White Plains, N.Y.: address, 26 Ridgeway Circle. George Levangie is now living in Dedham, Mass.: address, 41 Morse Avenue. Clara McWhirk has moved from Marshall, Ind., to Warrensburg, Mo. Colonel Charles B. Meyer has gone to Bradenton, Fla. Bill Nelson has moved from Minneapolis to Detroit: address, 16,000 Harrison Avenue.

Word has been received of the death of Augustin C. Titus of Newport, R.I. He died last December but we have no details.

Your Secretary had a very pleasant visit with Frank Maconi, meeting him by chance in the lobby of the Hotel Commodore. Frank is one of those classmates who hasn't changed a particle. He still has a great deal of black hair and retains those snappy brown eyes. He is vice-president of Graton and Knight Company in Worcester.

Al Burke, Jim Gibson, Ed Ryer and Al Fraser have been faithful attendants at the Alumni Council meetings this winter and have upheld the dignity and prestige of the Class. Perk Bugbee's attendance record has not been so good but he assures me it is on account of his extensive travels for the National Fire Protection Association rather than any lack of interest. I hope that in next month's notes I shall be able to report on a considerable number of '20 men attending the Convocation and Inauguration. – HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

## • 1921 •

Our hearty greetings to the entire Class on this gala occasion when we all join together in one of our regular monthly newscasting sessions in the pages of The Review. In observance of the event, our Class President, Raymond A. St.Laurent, has prepared a special message which we are glad to give precedence over the news of the month.

Addressed to all members of the Class, Ray says: "For some time I have had the urge to write you a personal chit-chat letter, so here goes. It is three years since we had our 25th reunion in Cambridge, Boston and on the Cape. About 150 members of the Class attended one or more of the gatherings. Also, there were about 30 wives, children and guests. If you didn't go, you missed something real and good – we had a grand time retraveling life's journey with those we had not seen for too many years. In another two years we'll have our 30th – we don't feel that old but we are – so let's think about it and plan now for a long week end together in 1951. Without trying to be sentimental or depressing, we may have fewer reunions ahead of us than behind us, reason enough to make some definite plans for getting together in 1951.

"There are 916 living members of the Class of 1921, with about 840 considered 'active,' i.e., those for whom we have good addresses. Of this number currently about 265 subscribe to The Review, hence nine times a year (November through July) read the news of the Institute, but even more important news about members of the Class. During the past year there appeared approximately 12 pages of 1921 class notes, giving news and information relating to approximately 500 classmates. As a result of Cac Clarke's tireless and enduring efforts, hardly an issue in 27 years has failed to have several columns of interesting news telling about our '21 gang. Cac has written many, many letters and has seen and telephoned a great many others of the Class to provide this information. He is doing a grand job for the enjoyment of all of us and if you don't subscribe to The Review you're missing something. Send Cac a few lines about yourself, the classmates you have seen recently or know about, or ask him questions as to the whereabouts and doings of those in whom you are interested. A little time on your part will make his task so much easier and more enjoyable. Cac's business address is at the end of this column and his New York telephone number is BOwling Green 9-3800. He lives at 215 Linden Avenue, Glen Ridge, N.J., telephone, GLen Ridge 2-8517-R.

"The Class of 1921 had a remarkable war record with 148 in uniform and most of the rest engaged in war production. Records indicate 106 in the Army, 41 in the Navy and one in Maritime Service. In the high command of the Army, we had four major generals, 12 brigadier generals and 28 colonels; in the Navy, one vice admiral, four rear admirals and 12 captains. About 30 received one or more decorations. In World War II our Class lost the following five men: Lieutenant Commander Howard R. Healy, Brigadier General Alfred J. Lyon, Colonel David A. Newcomer, Lieutenant Fred A. Raymond (U.S.N.) and Lieutenant Carl W. Starck (U.S.A.). Of our original group at the Institute, 108 are deceased. We bow in prayerful tribute to these classmates.

"For our 25th reunion gift to the Institute, we pledged ourselves to underwrite the cost of World War II Memorial. It seemed particularly timely and appropriate. Final plans are being formulated, namely panels of names carved in the marble and inlaid with gold in the main lobby, on a wall flanking the World War I Memorial. The cost of the new memorial is substantially more than was estimated over three years ago, hence our Class needs to raise more money to fulfill its obligation in meeting its 25-year gift. In 1946, we received approximately $4,350 from 165 members of the Class, but many have not yet given and others have given only nominal amounts. Zambry Giddens is in charge of the Memorial Fund and Jack Rule has been an active member of the Institute's committee. As soon as the plans and estimates are in final shape, you will receive a complete story.

"Many of you are aware that A. Warren Norton has filled many important positions in alumni activities, the most recent of which have been president of the Alumni Association, term member of the Corporation and chairman of the Alumni Fund. Chick Kurth for a long period of years has been our class representative on the Alumni Council and also has taken an active part in assisting in the arrangements for our Boston class meetings, along with Josh Crosby, Jack Rule, Mel Jenney, Lark Randall and others. Over a period of years, Bob Miller has served as photo-historian of the Class and has gathered an unusual collection of colored stills, colored movies, snapshots and group pictures, – taken at various times starting with our Class Day picture in 1921. There was a complete showing of these pictures for those who came back for Alumni Day last June when we met in the 1921 room at the Boston Hotel Statler in the afternoon and again in

the evening after the Alumni Banquet. The picture record will probably be shown again this coming June 11 to those who attend the class meeting on Alumni Day.

"Dan Harvey, who was in charge of our 10th and 25th reunions, has also been serving as our class representative on the Institute's relatively new 25-year class anniversary committee.

"Since the Alumni Fund was started in 1940, our Class has done pretty well both in the number of the Class who contribute annually as well as in the amount given. In the 1947–1948 campaign, 263 men gave $4,761 or about $18 per man; 94 per cent of the quota of contributors thus gave 101 per cent of the quota in amount. In the eight years through 1948, the Class of 1921 has given a total of $25,837.28, and this amount places us ninth in the 59 classes in total giving to the Fund, irrespective of size of class. Final figures for the 1948–1949 Fund are not available at this writing and the 1949–1950 Fund started on April 1. For many years Cac Clarke capably served as our Class Agent for this Fund and for the past three years Lark Randall has taken over and done another fine job. If you haven't sent in your 1949–1950 check, of which $5 applies to your dues and a subscription to The Review, you should do so for your own enjoyment and satisfaction. The Institute is alive and teeming with new developments and activities which are reported in The Review. When you read an issue you may pause with pleasure and a feeling of pride to be on the roster of the Institute.

"Always at Alumni gatherings there is a 1921 group; on last Alumni Day, June 12, there were 27 men from our Class who attended one or more of the affairs and there were 7 wives with the group. We had lunch together in Cambridge. Late in the afternoon we met in the 1921 room at the Statler. There were 1921 tables at the Alumni Banquet and a late evening of enjoyment in the 1921 room when Bob Miller gave another showing. This June 11 we will do it again, – come and enjoy it.

"Maybe I should apologize for writing so much but all these things were on my mind to talk about, so I hope you stayed with me to the end. Write me if you will. I'd appreciate hearing from you and I'll pass news on to Cac Clarke for The Review. Stop in for a chat on your way through Connecticut, day or night, at the Rogers Corporation, Manchester, Connecticut, telephone 5163, or at 47 Gerard Street, Manchester, telephone 6056."

To supplement Ray's excellent report, you may be interested to know that there are 20 sons of 1921 men now studying at the Institute and three of the Class who are professors: Walter M. Fife, Victor O. Homerberg and John T. Rule. Warrie Norton, Chick Kurth, Josh Crosby, Frank Kittredge, Mel Jenney, Lark Randall, Ace Rood and Jack Rule serve on various Alumni Association committees. Charlie Herty and Bill Stratford are alumni representatives on the Chemical Engineering and Chemistry departmental Visiting Committees, respectively. Officers of local alumni clubs include Whit Spaulding, President, Baltimore; Bill Loesch, President, Cleveland; Helier Rodriguez, President, Havana; Joe McEvoy, Secretary, Houston; Ed Praetz, President, Lawrence and Lowell, Mass.; Glenn Stanton, Secretary-Treasurer, Portland, Ore. The list of Honorary Secretaries of the Institute includes Harry Field, Hawaii; Ed Farrand, Illinois; Mel Rose and Whit Spaulding, Maryland; Wint Dean, Minnesota; Cac Clarke, Ed Lockwood, Munnie Hawes and Sumner Hayward, New Jersey; Irv Jakobson and George Welch, New York; Bill Sherry, Oklahoma; Glenn Stanton, Oregon; Charlie Herty, Pennsylvania; Simon Freese, Texas; Gene Rudow, Washington; Charlie Manneback, Belgium; Helier Rodriguez, Cuba. About 40 members of the Class are serving on the M.I.T. Committee for Financing Development, referred to in other pages of this issue. News of class participation in the Convocation and the inauguration of Jim Killian'26 as president of Technology will appear in the June issue.

Your Secretary makes public acknowledgment of thanks and appreciation to the 30 members of the Class who serve as newshawks for this column. More are needed and volunteers will be most heartily welcomed. Art Brambach is the first to report this month with a card from his home in Seattle saying: "At my request I am back in International Business Machine's domestic sales organization and have been able to remain in the West as branch manager at Tacoma, Wash. Had a most interesting six months in Europe where my main efforts were devoted to helping our German company get reorganized and operating on our established basis."

Our Glen Ridge neighbor and member of our local board of education, Phil Coffin says he recently talked with Frederick S. Dellenbaugh, Jr., who is now in Huntington, N.Y., with the apparatus division of Reeves-Ely Laboratories, Inc. Phil also reports seeing Ted Rose, who is vice-president of the Drinkolator Corporation, New York. – From Rochester, N.Y., Bob Miller says that he attended a chamber of commerce meeting at which Paul Rutherford gave a talk before a regional quality control conference. Paul is general manager of the Delco Appliance division of General Motors Corporation. – Bill Loesch writes: "Cleveland will be represented at the convocation in Boston by Donald W. Randolph, Vice-president of engineering at Apex Electric Manufacturing Company, and William F. Clements, who manages real estate." – Ray St. Laurent advises that Albert E. Bachmann was elected president of the Technical Association of the Pulp and Paper Industry at the February convention in New York. Red, who had just completed two terms as vice-president of "TAPPI," is vice-president and superintendent of Missisquoi Corporation, Sheldon Springs, Vt. Murray Jones and Chick Kurth are members of an operating committee of the Boston Edison Company to co-ordinate production, transmission and distribution.

Larry Conant of Washington, D.C., takes a bow for the article on his "Dad Coached Clubs, Inc.," which appeared in the January 8 issue of the *Saturday Evening Post* and pleads that these activities have delayed the collection of local news. – Bill Sherry of Tulsa, Okla., who holds the class record as the father of a family of eight, writes: "I had dinner with our new Tulsa residents, Bill Emery and his wife, on February 16 when the local club met on the occasion of a visit from Harold Lobdell'17." – Sumner Hayward, Transmission Engineer of the New York Telephone Company, says: "Weston Hadden is a staff engineer with our company, doing personnel training in the plant department. Summers he spends on his cabin cruiser on the Hudson or on Long Island Sound. I received Xmas cards from Frank Huggins of Cleveland and my old roommate, Hobart Fischer, listed as 1922, who is traffic engineer for the New England Telephone Company. I recently came across some old pictures of Hobart, Jack Barriger, San Hill, Jack Rule and myself as well as Jerry Collins, Glenn Fargo, Harry Field and Maurice Mason of the dormitory committee. I frequently see Connie Nelson Lees across a bridge table when she and my wife try to show Malcolm and me how to play bridge." – Our old standby, Architect Walt Church of Portland, Oregon, writes: "Irving G. Smith, of the architectural firm of P. Belluschi, has been elected president of the Oregon Chapter of the American Institute of Architects and is attending the national convention in Houston with Glenn Stanton, who is National Vice-President of the A.I.A. Wish I could attend the convocation and inauguration, especially since my middle boy, Bill, is a freshman in architecture at the Institute." – Sanford J. Hill, who is in the legal department of E. I. duPont de Nemours and Company, Wilmington, Del., says: "Robert D. Moore appears to have left duPont in 1946 and I have lost all record of him. Just had a nice phone conversation with Charles E. Mendinhall, who is engaged in the real estate business here. If Washington approval is received as expected, he is planning the construction of a 114-unit low-rent housing development for Wilmington which will be the first of its kind east of the Mississippi. He has two children, a boy of three and a girl, four, and asks that you change his home address to 1114 North Broom Street, Wilmington. On behalf of the Class, I extended sympathy on the death of his mother on February 14. Joe Gillson, a geologist for the duPont Company, is a hard man to reach since he is apt to be most anywhere in the world. At present he is in Mexico. Frank Flaherty and his wife had an interesting trip to Colombia and Venezuela during which they visited Frank's son, who is with the Liquid Carbonic Company. Frank is a patent lawyer with duPont. My work takes me around the country somewhat but I have not come across any '21 men in the last year's travels. There is an M.I.T. table at a local restaurant every Monday and we have anywhere from six to 15 men from assorted classes."

It is with the deepest sorrow that we record the deaths of two members of the Class. Word has just been received at the Institute of the passing of Francis Russell Whelton of Dorchester, Mass., on March 6, 1946. No further details are available. On February 7 last, Major General Richard Donovan, U.S. Army, re-

tired, died in Dallas, Texas, while attending the annual convention of the American Warehousemen's Association. After retiring from the service in 1947, he had joined the Alford Refrigerated Warehouses of Dallas as vice-president and director of research. A native of Paducah, Ky., and a graduate of the U.S. Military Academy, he had received his master's degree with us. A recipient of the Distinguished Service Medal, he was made a major general in 1941 and served as commanding general of the Eighth Service Command with headquarters in Dallas.

The live-wire Sheraton Corporation, operating 28 hotels, is again in the news with a half-million dollar proposal to equip every room of the newly acquired Park Central Hotel, New York, with a television set. Ernie Henderson, President, and Bob Moore, Vice-president and Treasurer of the Sheraton Corporation, are certainly making every effort to have their excellent chain of hotels live up to the slogan which we should have quoted correctly in a previous report as "The Hallmark of Hospitality." — Among the high brass, Harold O. Bixby, a colonel in the Signal Corps, is now stationed in Charlotte Amalie, St. Thomas, Virgin Islands, and Girard B. Troland, a colonel in the Corps of Engineers, is in New London, Conn. In the ex-brass department, Joseph H. Carr has put away the silver oak leaves and reports a Chicago business address. Henry A. Hutchins, formerly a lieutenant commander, is in Tucson, Ariz. New addresses have been received for James V. Boyd, Sidney Featherman, Herbert Kaplan, Richard Lee, Harold D. Moore, Chester A. Rimmer, Richard W. Sears, 2d, and Arthur W. Skilling.

John W. Barriger, President of the Chicago, Indianapolis and Louisville Railway, popularly known as the Monon, continues to make rapid strides in the improvement of equipment and services of the Hoosier line. With all passenger trains streamlined and diesel powered, Jack is rearranging schedules to conform to the votes of the traveling public. Typical of his efforts in the public interest is a listing in the Monon's timetables of schedules of other railroads between major cities served by the Monon. Following his public remarks some time ago on "Two Way Communication," he is keeping all personnel advised of management's actions and the reasons therefor.

Hope to see you all at Alumni Day, June 11, at Cambridge and at our room at the Statler. — CAROLE A. CLARKE, *Secretary*, International Standard Electric Corporation, 67 Broad Street, New York 4, N.Y.

## • 1922 •

Al Redway, formerly executive vice-president and general manager of the Geometric Tool Company, has been named president and general manager of American Paper Goods Company. — Additional members of the Class who have accepted membership on the Committee on Financing Development and who were not reported in the January notes are: Berry, Elmer, Johnson, MacDonald, McCurdy, Payne, Pinkham, Patty, Schoop, Sheppard, Tonon, West, O. G. Williams and Vande-Vate.

At the time these notes are being written, the April notes have not as yet been published and, therefore, your Secretary has received no response from the Class with regard to the suggested alternative plan for Alumni Day, June 11, which was developed by the Boston group at the time of the Midwinter Meeting. Thus, there is no knowledge, as yet, as to whether it will be looked upon favorably. However, it seems advisable to repeat the memoranda on this matter both as a reminder to those who have already considered the matter and as a suggestion to those who read of the plan now for the first time.

As was pointed out in the April notes, the following is purely in the nature of a suggestion which, if a reasonable number of the Class find desirable, may be adopted. The proposed alternative plan for Alumni Day, Saturday, June 11, is as follows: 1. One of our classmates, with a summer place on the south shore between Boston and Plymouth, has offered his establishment for the day. 2. One or more M.T.A. buses (capacity 41 seats) will be engaged to start from the Hotel Statler at some convenient time say 9:00 A.M., to drive those who would like to travel as a group. 3. Those who would prefer to go in their own cars are, of course, welcome to do so. 4. There will be no planned entertainment. Sufficient food (perhaps in the form of "make-your-own-sandwiches") will be on hand to prevent starvation at least until dinnertime. And, it is also thought that a barrel of iced beer would be a help. 5. It probably would be possible to arrange for golf at Marshfield, Plymouth or Duxbury for those who might like to play 18 holes. There is doubt about Duxbury but Plymouth, it is understood, will surely be available. 6. The bus, which will lay over at our destination, will return to Boston to reach the Statler about 5:00 P.M. so that we can meet as usual in Whit Ferguson's room for more of the same. Here, clothes can be changed for the evening Statler banquet, if necessary. 7. The cost of a 41-passenger bus will not exceed $70 for the day, so, if we can count on a group of at least 20 to 30, the transportation cost will be small. Other expenses can be pro rated, and likewise will be modest.

Will those reading the above who think they would like to join in this plan, please write to the Secretary so that we can determine whether or not there is sufficient interest to justify going ahead.

New addresses: Mortimer C. Bloom, Naval Research Laboratory, Metallurgy Division, Washington 20, D.C.; Keith T. Campbell, 1197 Greenbay Road, Lake Forest, Ill.; Charles C. Fulton, United Nations, Narcotics Division, Lake Success, N.Y.; G. Dewey Swan, R.F.D. Number 4, Greenwich, Conn. — C. YARDLEY CHITTICK, *Secretary*, 77 Franklin Street, Boston 10, Mass. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo, N.Y.

## • 1923 •

The illustrated report on the 25-year reunion has been out long enough now so that your Secretary has received a number of letters from persons who were not at the reunion but who were pleased to have the report as a souvenir. There is still nothing further on two items which originated at the informal business meeting of the Class during the reunion. The nominating committee, appointed by the President to review the situation with respect to class officers, is still deliberating on this matter and when they have made recommendations they will be passed along by mail. A committee on plans for a 50-year gift was also appointed at the reunion, in order to work out a plan which might enable the Class to commemorate its fiftieth anniversary with a gift to the Institute. It is hoped that a plan as successful as our 25-year plan can be worked out and this committee, too, will eventually come up with a recommendation.

Members of the Class are reminded that they are principally kept in touch with one another by class notes in The Review. The Secretary is able to perform a service through these columns only in proportion to the extent to which members of the Class both read the notes and contribute to them from time to time. This issue will be read by a good many who do not see the class notes as a usual thing. To these, your Secretary says that notes appear regularly about the Class in every issue and he recommends that those not on the mailing list of The Review get on it by responding annually to the alumni mailings.

J. C. Bertino, Professor of marine engineering at the University of Buenos Aires and retired Commander, Naval Engineer, was one of those who observed that the reunion report was a nice souvenir for those like himself who could not make the reunion. He remarks that the M.I.T. Club of Buenos Aires is meeting regularly under the presidency of L. A. Igartua. — Jim Brackett, Class Agent for the Alumni Fund, has moved to Dallas, Texas, along with the Chance Vought Aircraft Corporation. He is with the Industrial Engineering department of their organization. — Wesley McL. Hague is commander of the Boston Naval Shipyard. He was sworn in during March as a rear admiral. Admiral Hague has the distinction of having started in the Navy as an enlisted man.

I regret to report a number of deaths, of which we have had belated word. These include the deaths of Gerald M. Nauman, XV, on April 25, 1948, and George C. Wolfe, VI, on May 20, 1948. — V. Joseph Altieri, chief chemical engineer of the Eastern Gas and Fuel Associates of Everett, died in Watertown on February 10, 1949. He was a member of various professional societies and the author of several books for gas chemists. He leaves his wife, two sons and a daughter. The older son is a member of the senior class at M.I.T. — HORATIO L. BOND, *Secretary*, National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass. HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

## • 1924 •

Since this issue of The Review is the last in which a forward look may be taken at plans for the big 25th reunion, it is pertinent to warn: "Get your registra-

tion in right now if you want to attend." On March 15, Russ Ambach reported 78 definite reservations, with a few more arriving each day. By the time this Review reaches you, you will have had a class letter from Chick Kane with later totals, names, and details of plans. The names of those heading committees should tell you that the reunion will be a top-notch one.

The flood of questionnaires which came back to Chick assures a well-rounded 25-year book, on which Chick and Herb Stewart had completed their work in March, although the Secretary still had his portion to write. It will give quite a picture of what a class looks like after the wear and tear of a quarter of a century in almost every pursuit in which a man can earn his living – and spend it. A look at the questionnaires gives assurance that a trained engineer, after 25 years, is not the materialistic, bomb-producing heathen that some of the current controversial literature would make him out to be. Up to now, there has not been much evidence of the sort produced by your answers.

The class gift is another important project, perhaps more important than any other in view of the current needs of the Institute, and the committee headed by Cy Duevel and Ray Lehrer is out to set a new mark in class giving. If you haven't heard from them – and they from you – there is still time.

From the Assistant Secretary: Your committee has been working hard to try and get definite commitments but if we do not get them we do not know the outcome. Plans are underway to correct this situation and I am taking advantage of this opportunity to urge any of us who has not kept up his insurance and who has not signed his pledge card to do so now. We can not wait until June 11 is upon us if we hope to come anywhere near reaching the six figures which is our goal. Nat Schooler and Bill Correale are doing a wonderful job in New York trying to corral the rest of us from whom we urgently need financial gifts.

Ed Dunlaevy has joined the ranks of vice-presidents (page Cardinal) and also has been made a trustee of the New York Savings Bank. Pret Littlefield and Peggy were host and hostess at a small M.I.T. gathering at their home on March 20. Both B. Cushman and I were included and enjoyed meeting with other Alumni. Fred Hungerford was in town last week and advised that he was no longer with Solvay but instead is air conditioning engineer for the state of New York with headquarters in Albany. Carl Vicario stopped me in Grand Central the other day and expressed regret at being unable to make the Boston trip. I was in touch with Larry D. Bain, who is with Western Electric on Park Row here in New York. I understand that Jack Cannon is living in Plainfield and running an electric motor company in Newark. Understand also that Nish Cornish is coming up from South America to attend our reunion. Andy Kellogg is general manager of the leading newspaper in Schenectady. Saw Bill MacCallum recently, and he is getting desperate for pictures for our reunion. Let me remind you that they do not have to be photographs or snapshots taken only while you were at Technology. Bill is just as anxious to show what you look like now or what your family looks like. I understand from rumor that the old Beta steamroller will be revived and that Charlie Phelps and Jim Peirce, with the advice of Dent Massey, are going to get a headstart on us and have a complete platform to offer when we go into session. H. H. Razzack was back with some very interesting stories of his recent trip to India. Bill Rosenwald is very active in our own fund-raising efforts as well as others. Haven't heard from Bill Robinson lately but you can rest assured that he is working like a trojan on our fund drive in the Cleveland area. Haven't seen Zarkie Zartarian since we fought the battle of Fort Rutland and will be looking forward to seeing him in June. Henry Zeiger will be in my office this week at which time I will learn more of his political successes. Ed Wininger is lunching with me this week and I am sure will be on hand for the reunion as well as the convocation. – FRANCIS A. BARRETT, *General Secretary*, 234 Washington Street, Providence, R.I. WILLIAM W. QUARLES, *Assistant Secretary*, 330 West 42d Street, New York 18, N.Y.

## • 1925 •

Your Secretary seems to need more than the usual amount of forbearance this year. First, no notes until January, and then a skip until May. The second gap was due in part to the upset conditions here at home as a result of the serious illness, and death on January 31, of my eleven-year-old daughter, Anne.

In December I received a letter from Frank Preston, former Class President, which reminded me that somewhere I had some notes which he gave me when I visited him while in New Haven last spring. The first concerns Frank's brother-in-law Don Wheeler, II. He has been mayor of Hudson Falls, N.Y., since 1942 and is now in his fourth term. He is manager of the Scutan division of the Union Bag and Paper Company at Hudson Falls. He was married to the former Louise Riley in January, 1932, and they have two sons and one daughter: Samuel, 15; Martha, 13; and Donald Billings, Jr., known as Bill, 7. Also, Frank reports on Lester C. Smith, X, who has an important position with the Spencer Turbine Company at Hartford. Frank reports having met Les at A.S.M.E. meetings, and says that he is very active in that society, being representative on the Connecticut Technical Council.

Occasionally, it is possible to include an item based on a change of address notice: Bill Steinwedell, XV, is at the American Embassy in Paris, where he is located in the office of the special representative in the Industry division. The notice was received from the Economic Co-operative Administration, so that it is probable that his work has to do with that organization. Class members in the East, and possibly in other sections of the country as well, have probably been aware that our fellow member, Massachusetts Commissioner of Correction Elliott McDowell has been headlined recently in the case of the discharge of Dr. Van Waters, head of the Women's Reformatory at Framingham. This is not the place to take sides in a controversy, but we may be sure that in spite of the high temperatures being raised by both sides, Elliott is acting according to what he conceives to be the best interests of all concerned. Mary Morrison Kennedy, mentioned several times previously in these notes, received a two-column mention in the Boston *Post* of October 24. She is a technical consultant for the Sheraton Hotel chain. The occasion of the comment is a description of some of her decorative work in the Copley Plaza, Thompson's Spa, and the Sheraton Hotel in Boston. The following is quoted from the article as a description of the newly opened Coffee Shop at the Copley Plaza: "In the Town Room, she utilizes large expanses of corrugated glass, affording the room a realistic effect of daylight illumination. Cold cathode lighting, which provides almost perfect diffusion, adds to the illusion of daylight."

The two following items have been received from the General News Bureau of the General Electric Company: "Dr. Leslie B. Bragg . . . is head of the Chemical Engineering Section of the Knolls Atomic Power Laboratory, which is operated by the G-E Research Laboratory for the Atomic Energy Commission. Dr. Bragg joined the staff of M.I.T. after his graduation, and received a doctor of science degree in 1933. He worked from 1933 until he joined the General Electric Company in 1948 for the Foster Wheeler Corp." "Karl R. Van Tassel, manager of the Control Divisions at Schenectady . . . joined the company as a student engineer in 1925. In 1926, he was transferred to the Transformer Engineering Dept., at Pittsfield, Mass., where he remained until 1928, when he entered the Single-phase Motor Dept. there. Later he was made designing engineer of that department. He was transferred to the Fractional-horsepower Motor Engineering Dept., Fort Wayne, Ind., in 1932. In 1936, he became its commercial engineer and in 1938 was made staff assistant to the manager of the Fort Wayne works. In June, 1940, Mr. Van Tassel was made manager of sales of Lynn Motors, at the G-E Lynn Works, where he remained until October 1942, when he was named manager of sales of the Integral Hosepower Motor section of the Motor Division with headquarters at Schenectady." – Received from R. L. Rockefeller, a brief note to the effect that an article by him appeared in the December, 1948, issue of the *Journal of Accountancy*. He is a consultant in taxes and accounting, estate and trust administration, and stock valuations, with offices at 140 Cedar Street, New York City.

In sending in his contribution to the Alumni Fund, Yu H. Ku writes: "My recent connection is president, National Chengchi University, Nanking, China." He lives in Shanghai at present. Mabel MacFerran Rockwell is the subject of an interview in the Sunday Los Angeles *Times* for January 30. Mentioned is her work in connection with the Hoover Dam power transmission system, and her part in the Los Angeles Metropolitan Dis-

trict's Colorado River Aqueduct planning. She is now a civilian research physicist in the United States Naval Ordnance, and is in charge of co-ordinating technical reports on all phases of rocket research at the Navy's plant at Pasadena. The immediate reason for the interview was her comments with regard to the national science foundation, which she feels would be unnecessary if the same amount of money were spent to promote the brotherhood of mankind. The following quotation gives her point of view: "We fought two World Wars, but we lost them both. World War III must be a spiritual war waged on the hearts of men, inspiring them to overthrow their own tyrannies and destroy their own dictators. It is forever impossible to beat democracy into other nations with bombs or atomic force."

After a silence of several years, I have an eight-page letter from Geoff Roberts in South Africa. Here are several quotations from it, with brief explanatory interpolations to provide continuity: He mentions attending a dinner about two years ago "in honor of a visiting professor from the Institute, whose name was Gaudin. His field is mining and metallurgy, and I believe he is an authority on the flotation process . . . [there were present] 18 former students of the Institute from this area . . . I think personnel departments are generally nonexistent or inadequate here, but in the firm I work for, African Explosives and Chemical Industries, Ltd., relations between labour and management are highly developed. . . . Most of the plant [equipment] in the Detonator Factory is of German origin, unlike other departments in the company, where American plant predominates. . . . Various directors of Imperial Chemicals visit South Africa from time to time. Lord McGowan has been out here twice since the war. . . . Lord Wavell was appointed a director of African Explosives some time ago, and came out to look the place over." Geoff and his wife are planning to visit England (her former home) and Berkeley, Calif., (his home for 25 years) this year. He says: "We are booked to sail from Capetown on the *Athlone Castle* on April 15. We are spending something like six weeks in England before crossing the Atlantic. We are proposing to cross the Continent by bus, though I have had no experience of long-distance bus travel. My wife was born in Stratford-on-Avon, and that is about as close as she has ever been to America."

This concludes the material on hand, and I shall try to complete the volume without any further blanks. — Hollis F. Ware, *General Secretary,* Box 52, Godfrey, Ill.

## • 1926 •

This month Alan K. Laing, representing the architects, is guest conductor of this column. "After a lapse of time too nearly approaching infinity, this Secretary resumes by first of all expressing the best wishes of Course IV, 1926, to our classmate, President Jim Killian. What a temptation to slide into the old 'It seems but yesterday' beginning and recall events which made the inmates of the Rogers Building feel that Jim was unusually enlightened for an engineer and a sort of associate of Course IV. Instead, we shall merely point out that each of us can help our new President in the challenging opportunity and task confronting him.

"Now for the scraps of news about the 1926 architects. Fred Buenz sent his usual cheerful Christmas note from San Antonio, Texas, where he is in practice. Two boys, John and Peter, try to keep his nose from the drafting board but clients constantly interfere with Fred's free time. — I hear that Gene Nowlen and Homer Huntoon '28 are in the Los Angeles area (meaning that they are in California). Leon Zaitzevsky lived there for a number of years but felt the need for a more invigorating climate and returned to Boston. I have had no news of him in recent years.

"Hi (remember? — six feet six) Waters last wrote from Oakland, Calif. He had been in South America for a number of years, then Hawaii, two years in the Orient, then back to California where he was living the life of a country squire within the Oakland city limits. — Your reporter sees Sammy McMurtrie in Burnham Hoyt's office in Denver from time to time, and saw Eddie Holien in Santa Fe last summer. The Course IV Secretary himself continues in his efforts to humanize young architectural minds by teaching architectural history at the University of Illinois and begs for more news from all of you Course IV classmates." — James R. Killian, Jr., *General Secretary,* Room 3–208, M.I.T., Cambridge 39, Mass.

## • 1927 •

These notes are written as I am completing arrangements to attend the inauguration of Dr. Killian as the 10th president of M.I.T. Because the Class of 1926 is removed only one year from our own and because so many of us knew Jim Killian, this event is of particular importance to us and a large representation of the Class of 1927 will be on hand in Cambridge.

Among class members whom I have seen recently are Dike Arnold and Ray Hibbert. They both come to New York every February with their wives to attend the Greybeards Dance in Bronxville with Jim and Mollie Lyles. I had a telephone call from Colonel Glantzberg who is still in Washington but came to New York to attend a meeting of the Institute of Aeronautical Sciences. I saw Jack Herlihy, still very much with United Air Lines, when I was in California.

John A. Swift who has been with Heatbath Corporation in Springfield, Mass., since 1946, recently moved to 155 North Whitney Street, Hartford 5, Conn. We are checking to determine whether this involves a change in his business connection. Similarly, we can, as yet, assign no reason for Charlie Tedford's move from Richmond, Va., to 250 Livingston Avenue, New Brunswick, N.J., but our spies are at work.

The Newark *News* recorded a signal honor to George W. Brady, Chief Engineer of Curtiss-Wright Corporation, Propeller division, at Caldwell, N.J. On the occasion of the Honors Night Dinner of the Institute of the Aeronautical Sciences, in New York, Brady was the recipient of the 1948 Sylvanus Albert Reed award for "his contribution to the development of the reversing propeller resulting in shorter landing runs for large aircraft." He has headed this development program for many years and is given rightful credit for a real contribution to the safety of multiengine planes. George records his own activities as follows: "I came down from Buffalo in 1938 with the then newly formed Propeller division of Curtiss-Wright Corporation as chief engineer. The war has required a tremendous expansion in our activities, both production and development. In spite of the long hours and high-pressure schedules, the past few years have been most interesting and I hope that in the postwar years we will be able to continue work on a great many interesting projects. I feel that aircraft propellers will continue in spite of all the current talk about turbo-jet propulsion. The latter has its place but like the helicopter, it is now being promoted beyond its present potentialities."

Add to the titles now owned by Bud Fisher, as noted in the June, 1948, notes, the following: Deputy Co-ordinator of Refining Activities for Standard Oil Company (New Jersey). — George P. Standley has been appointed as assistant manager of rayon research for the Industrial Rayon Corporation, Cleveland, Ohio, where he will continue to concentrate on the development of special high-strength rayon yarn, particularly in use for tires.

This should be as good a time as any to thank those of you who have sent your Secretary news of yourselves and your classmates, and to urge the others to do likewise. — Joseph S. Harris, *General Secretary,* Shell Oil Company, Inc., 50 West 50th Street, New York, N.Y.

## • 1928 •

Among the 1928 group that attended the Mid-Century Convocation were: Maurice Beren, S. A. Brown, M. C. Budlong, A. R. Caverly, George DeCamp, Jim Donovan, Huyler Ellison, Bill Gorfinkle, S. M. Humphrey, G. C. Jacoby, Art Josephs, Bob Kales, M. H. Klegerman, Tom Larson, W. S. McClintic, John Melcher, Clark Merrick, George Palo, E. S. Petze, Len Puschin, John Russell, S. J. Shure, R. S. Slayter, C. A. Southwick, Jr., E. S. Thompson, Ed Walton, and Ray Wofford.

Imagine our surprise in calling on the March of Time regarding publicity for the Churchill-M.I.T. speech to find that the March of Time's senior associate producer is none other than D. Y. Bradshaw. Brad is doing a wonderful job and has direct responsibility for many (and in some periods most) of the March of Time films. — Gil Ackerman is now president of the Propeller Club of the United States Port of Seattle in addition to his regular job as operating manager of the American Mail Line. — Ed Gray is now works engineer of the General Electric plastics plant at Coshocton, Ohio. — Bill Loomis recently organized Associated Products, a sales company operating in Ohio, West Virginia, western Pennsylvania and western New York. This company handles

such lines as piston rings for industrial use, corrugated shipping containers and metal signs.

Ahmed Sharabati is now minister of war of Syria and has been involved in the recent Arab movement in Palestine. — Harold Bialkowsky has recently been made director of research of the Pulp division of Weyerhaeuser Timber Company, Longview, Wash. — The Shell Oil Company has named J. S. Morse as operations manager of their Cleveland division. — Our President, Ralph Jope, has been made assistant director of the M.I.T. Development Committee and, as many of you know, has been all over the country and doing a magnificent job. Ralph had a major part in arranging the recent Convocation meetings and is one of the big reasons why it went so smoothly. — Ray Wofford is now manager of branch buildings in the sales department of the National Biscuit Company. Ray has his hand in the design and construction of 20 or more National Biscuit Company buildings. — GEORGE I. CHATFIELD, *General Secretary*, 49 Eton Road, Larchmont, N.Y.

## • 1929 •

Don't overlook our 20th reunion. It is hoped that 1929 will have a grand turnout. Get your *x's* on the cards and send them back to John Wilson, Doelcam Corporation, Newton, Mass. — FISHER HILLS, *Acting Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

## • 1930 •

The Class is pleased to join the other classes in paying tribute to the Institute's 10th president, James R. Killian, Jr.,'26. In special recognition of his inauguration The Review is being sent to all members of the Alumni Association, so we are glad to have this opportunity to greet all of our classmates. The 20-year reunion is scheduled for June, 1950, and it isn't too early to start planning to attend with other members of the Class who live in your vicinity. We had a turnout of more than 70 men in 1940 at Saybrook, Conn., and should easily exceed that number next year. If you have any ideas, questions, or would like to serve on one of the many reunion committees, please let us know. In accordance with a plan which was very successful in 1939–1940, we shall attempt to round up enough news to warrant the appearance of a 1930 column in each issue of The Review from now until the reunion. Since we are almost entirely dependent upon you for material for these notes, your help in this respect will be appreciated by all!

Classmates not previously reported in this column as members of the Institute's Committee for Financing Development include: Bill Buracker, Winchester; Bill McDowell, Endicott, N.Y.; Ben Smith, New York City; Bill Jackson, Pittsburgh; George Schatz, Cincinnati, Tom Wigglesworth, Cleveland; John Hanley, Omaha; Mark Culbreath, Kansas City; Dave Wells, St. Louis; and Fairleigh Smith of Harlingen, Texas. — Reg Bisson lost no time in noting the report of the engagement of Dan Hughes in the February issue, and sent a post card informing me that the wedding, to Gladys de Freitas of Middletown, N.Y., was celebrated last September. Belated congratulations, Dan, from all of us! Charlie Edlund is head of the department of social sciences and professor of textile marketing at Lowell Textile Institute. In February he addressed the Lawrence Rotary Club on "The Role of Textile Education in the American Economy." In the same month the National Association of Power Engineers, meeting in St. Louis, had as a featured speaker, Irvin Mitchell, who is assistant chief engineer of the A. Leschen and Sons Rope Company, and also a member of the Missouri Bar.

Seven classmates attended the Midwinter Meeting of the Greater Boston Alumni. Norwood Kenney was there with two sons, Charlie Abbott with a son who hopes to enter the Institute this fall, Tom Connor, Enoch Greene, Warren Martell, Scotty, and your Secretary. For the next five years Scotty will represent our Class on the Alumni Council. He has served on the Council for several years as an alternate member.

We would like to call your attention to the Alumni Fund for 1949–1950 which has just started. You don't need a sales talk from us because Phil Holt handles that phase of the campaign very efficiently, judged from your response. If more of our Class would participate this year, we would be able to make a very much more substantial contribution in honor of our 20-year reunion. — PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass. *Assistant Secretaries:* ROBERT M. NELSON, 2446 Iroquois Road, Wilmette, Ill.; ROBERT A. POISSON, 105 East 88th Street, New York 28, N.Y.

## • 1931 •

The half-dozen '31 men on M.I.T.'s Committee on Financing Development are distributed from Boston to San Francisco in such diverse fields as finance, production, transportation, and engineering. William A. Brown, Jr., II, is with the Stuart Oxygen Company in San Francisco; Roy Chamberlain, XIII-C, is with the Tankers Company in New York City; William C. Mentzer, Jr., XVI, is general manager of engineering with United Air Lines in Chicago; Fred Ritchie, XIII, is a vice-president of National Shawmut Bank in Boston; Gil Roddy, XV, is treasurer of Boston Manufacturers Mutual Fire Insurance Company; and Bob Vose, II, is director of research and engineering for the Fuller Brush Company in Hartford, Conn.

Fred Ritchie broke into the news some months ago when the National Shawmut Bank selected him to take charge of their newly enlarged and remodeled Arlington Street office in downtown Boston. Fred has been in banking for some time. From 1935 to 1945 he served as a trust officer of the Merchants National Bank of New Bedford. In 1940 he was ordered to active duty as a first lieutenant and became chief of the fiscal and legal sections of the Boston Ordnance District. He was awarded the Legion of Merit, and in 1946 and 1947 served on the staff of General Clay in Germany. Following his return to this country, he was in the Shawmut's foreign department until his assignment to the Arlington Street branch.

Jim Fisk has been in the news in recent months. Last fall he resigned his position as director of research for the Atomic Energy Commission to return to his teaching as Gordon McKay professor of applied physics at Harvard. A short time later Professor Fisk was elected one of Harvard's 10 Senior Fellows, and as such will direct the young college graduates of outstanding promise who are given three years of study at Harvard as Junior Fellows. Classmates may remember that Fisk himself was one of those Junior Fellows in the 30's. — Early this year, George M. Bunker became president of the Trailmobile Company in Cincinnati. Previously, he had been vice-president in charge of manufacturing for the Kroger Company. He joined the latter in 1942 as manager of the Cincinnati factory, and in 1945 was named general manager of the manufacturing division. — Our Course III brethren are also being heard from. L. C. Hicks, who got his S.B. degree in 1931 and his doctorate in 1933, was recently appointed director of research for Allegheny Ludlum Steel Corporation, Pittsburgh. He has been with the company since leaving the Institute.

Bob Baxter supplies our final note of triumph. He has been appointed chief design engineer for Sharp and Dohme in Philadelphia. Previously, he had been with the General Aniline and Film Corporation for a number of years, his most recent position being chief process engineer for the chemical departments of the Ansco division in Binghamton, N.Y. He also put in 3 years of war service; one year with the War Production Board as assistant chief of the chlorine unit, and then 2 years as a major in Chemical Warfare Service as assistant chief of the Lend-Lease division. — JOHN N. HIGGINS, *General Secretary*, 181 East 161st Street, New York, N.Y.

## • 1932 •

A permanent class gift committee is being organized under the chairmanship of Joe Welch. As soon as practical, you will all be advised of the details of this program which will give us an opportunity to do our part as loyal Alumni. At a recent meeting of the Development Committee in New York, your Secretary had a pleasant evening with Ed McLaughlin and Jack Kelton. Jack Crowther, who now lives in Old Greenwich near Horace Ford, Jr.,'31, was supposed to be at this meeting but was unable to attend.

Tom Regan of Winchendon has been elected vice-president of the General Box Company of Chicago, the company he has been with since graduation. John Calkin has been appointed to the faculty of the University of Maine and will be director of the department of industrial co-operation. We are indebted to Obie Denison'11 for these two items.

Martin Meyer writes that his fourth son, John Howard, was born on December 9.

Julio Gallese, his Peruvian roommate, visited him for a few hours on his way from Europe to Peru, where he has an engineering firm in Lima. – CLARENCE M. CHASE, JR., *General Secretary*, 1424 East 7th Street, Plainfield, N.J. *Assistant Secretaries:* CARROLL L. WILSON, United States Atomic Energy Commission, Washington 25, D.C.; WILLIAM A. KIRKPATRICK, Allied Paper Mills, Kalamazoo, Mich.

## • 1933 •

Your Secretary has been reminded that it is customary to have some notes in The Review from time to time and that this special issue summarizing the Mid-Century Convocation will have a large circulation. As most of you know, this year we have consolidated our information of the last six months together with a résumé of our 15th reunion in the brochure, including some photographs, which was mailed to everyone approximately February 15. If you did not receive a copy let us know, as copies are available from the undersigned.

A note from Dick Fossett a few days ago from Long Beach advised us that he is still with Procter and Gamble and has just started up a new synthetics plant – Dreft and Tide – which has kept him pretty busy. Southern California is getting more crowded every day, and living in California is just like any other metropolitan area. Dick has a wife and two boys.

A note from Bill Pleasants at Merion Station, Pa., tells us that he has finally moved back to Philadelphia after living all over the United States for the past 20 years. He left the Hanford Atomic Energy plant to go with the Atlantic Refining Company at Philadelphia and is glad to be back in private industry. Bill's job with Atlantic is manager of plant development and maintenance for the sales department (company-wide) which also has him traveling from plant to plant. Bill has a wife and two daughters.

That's all the information I have this month; how about sitting down and dropping me a note and we'll have some notes in this magazine more frequently. – GEORGE HENNING, JR., *General Secretary*, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn 7, N.Y.

## • 1934 •

Plans for the 15th reunion are rolling along in fine style. We have already received a large return on the questionnaire but we hope that if you have not yet sent yours in you will do so promptly. The prizes for the giant give-away game are coming in and it looks as though some of the boys are going to go home with some valuable booty. The reunion committee is doing a fine job of organization, and the get-together is going to be a bang-up affair.

In addition to Chairman Mal Stevens' responsibility in the handling of the reunion, he has just added a new responsibility to his shoulders. Malcolm Dwight Stevens – Mike for short – was born on March 17. He weighed seven pounds, five ounces. The month is appropriate, both for Malcolm and St. Patrick's Day. Congratulations, Mal!

You will undoubtedly be pleased to know that Sam Groves was made electrical vice-president of the United Carr Fastener Corporation by the Board of Directors on February 17. – Kendrick H. Lippitt was recently appointed chief engineer of the Technical Appliance Corporation, manufacturers of Taco Radio Television antennas at Sherburne, N.Y. Kendrick spent the first nine years of his engineering career as an electrical designer at International Business Machines Corporation. During the war he attended the Naval Aeronautical Radio and Radar Laboratories in Philadelphia as superintendent of that organization. He was responsible for the development of various types of electrical equipment for use in aircraft. From the end of the war until recently, Kendrick was associated with George C. Davis, broadcast radio consultant in Washington, D.C., in which position he divided his time between field problems and design considerations in the FM and TV fields. – JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Exploration Company, Chuquicamata, Chile, S.A.

## • 1935 •

Recent notes for 1935 have included welcome news furnished by Bernie Nelson, Dick Lawrence, Mike Kelakos, Jack Ballard, Charlie Bowen, Hank Ogorzaly, Jack Burton, Fred Kraus, and Bev Dudley. Dud, who is editor of The Review, and I are equally interested in reporting topics of interest to the Class. Let's hear from you, if it is only a card. This month I have a letter from Charlie Debes. Charlie has been in business for himself for about five years – Charles N. Debes and Associates, Consulting Engineers, Rockford, Ill. A current job of his is the complete air conditioning of public rooms in a hotel. The work will include the largest activated carbon filter installation in any hotel in the country to date. Jobs in the design stage are acoustical provisions for an FM, AM and television studio and mechanical plans for a 150-bedroom Y.M.C.A. Charlie has two little girls and hopes, in his own words, "to continue to merrily roll along."

Damon Francisco has moved from New Rochelle, N.Y., to Seattle for Carbide and Carbon Chemicals. – Dex Stevens, who supplemented his schooling at Technology with courses at Lowell Textile, worked for Uxbridge Worsted for nine years; managed the Heywood Mills in Tilton, N.H., for a time; and worked until recently for the M. W. Killogg Company in Jersey City on loom development. – A news clipping without particulars reports the untimely death of Walt Daley. – Pete Grant, President of Grant Photo Products, Inc., New York and Cleveland, is pioneering in the manufacture of sensitized paper for the Land "one-minute" camera Polaroid has introduced. – Biss Alderman continues to occupy the architectural limelight in Holyoke, this time with a talk before the Lions Club on the interpretation of modern design. – Jack Holley, family man in a big way and vice-president of the Whyco Chromium Company, Waterbury, Conn., called on me in Bridgeport in March. Jack has five youngsters. The oldest girl, who wore a cap and gown at Class Day, is a freshman in high school. Jack served as a major of Coast Artillery during the War and saw action in the Pacific. He now has charge of sales for a chromium plating concern. Jack reported recently seeing Dick Shaw, who is an engineer at the Hartford Machine Screw Company. Dick has three youngsters. According to Jack, Joe Kemper organized the Cincinnati Die Casting Company a year or so ago and, at last reports, was doing very well. Jack called on Tom Hafer, general manager of Reda Manufacturing Company, Springfield, this winter. Reda does contract machine work and manufactures a line of high pressure flexible hose. – Art Linn is another Coast Artillery veteran in the chromium business. Art works for the United Chromium Company, Wayne, Mich. He has participated in research on electrocolor plating processes. – Bob Granberg, Vice-president of the Class, is again serving as class representative on the Alumni Council. When I last saw Bob, he had just taken a job at Filene's. He has three youngsters.

This time next year we will be actively preparing for reunion. For reasons of the extra circulation of this issue of The Review, it seems appropriate to mention the subject now. In September, 1946, 86 of us had a whale of a good time at Heaton Hall in Stockbridge, and voted enthusiastically to return there at the same time in 1950. The location is equally accessible from Boston and New York, and cuts 300 miles of round-trip travel off a trek to Boston for fellows from out Buffalo, Cleveland, and Chicago way. The accommodations, service, and recreation facilities were excellent three years ago. Next year we hope to double – even triple – the turnout. Helped by a corps of volunteers and/or "draftees," Jack Colby and other class officers are going to make a real effort to plan a fine 15th reunion next year. By making a point to see or write to classmates in the coming year, furnishing news for the class notes, and otherwise reviving class interest, you all can pave the way for a large and worthwhile get-together. A little work by a lot of us will get better results than a lot of work by a few. – J. BARTON CHAPMAN, *General Secretary*, 7 Lalley Boulevard, Fairfield, Conn.

## • 1936 •

Many classmates are arriving in Cambridge to hear "Former Naval Person" at the Mid-Century Convocation. This assemblage should take on the aspect of a 13th reunion. It is rumored (your Secretary never hears directly) that El Koontz, Hank Cargen and their wives are coming from New York, that Fletch is not being allowed to come; Scott Rethorst is insuring attendance of at least one District of Columbia citizen; Dana Devereux and Harriet are coming from Wilmington. If these prognostications prove true, your Secretary promises news in the next issue. (There is an ugly story current that our President, one J. A., has threatened me

with expulsion from high office. No truth, I don't even know where he is — either.) A few news notes; no letters: Tobey-Worthen marriage on November 27 in Winchester, Mass. The paper said: "Wearing ivory satin with a veil of illusion." Tobe and wife are living in Hamden, Conn. — T. Ledyard Blakeman is executive director of the Detroit metropolitan area Regional Planning Commission. — B. Vonnegut, Bernie, recently spoke before the 113th meeting of the A.C.S. in Chicago. — Won't someone write me a newsy letter?

Peter White died suddenly of a heart attack on December 12, 1948. You will remember him as Course VI-A, as a swimmer, in connection with the *VI-A News* and many of us, as a friend. I know the Class joins in sympathy for his wife, Dorothy, his son Peter, Jr., and his daughters, Ann, Dorothy, and Frances. — WILLIAM W. GARTH, JR., *General Secretary*, Lithomat Corporation, 58 Charles Street, Cambridge 41, Mass.

## • 1937 •

The class gift committee has been meeting quite regularly and has evolved a plan which they will present in a few weeks. Joe Heal, Bob Thorson, Rutherford Harris and Phil Peters have held frequent meetings to perfect a workable plan.

James D. McLean, who has been connected with the Industrial division of Philco Corporation for some time and previously was commercial manager of the company's television station WPTZ, has been appointed manager of the Industrial division. The Philco Industrial division handles the development and sale of electronic equipment for the government, as well as commercial products, including automobile radio for the motor car industry, mobile communications equipment, microwave relays for television and communications, television station equipment and other engineering products.

Fred Ferrary and a friend of his, Lee Werblin, are in business together now making a child's wash basin which has running water provided from a medicine cabinet effect rigged up over the bowl. They plan to expand into other things in the near future. — Walter B. Davis has been named Melrose chairman of the 1949 Children's Hospital medical center campaign to raise $11,500,000 for a new center to be erected next to the present one in Boston. — Walter L. Hughes has just been appointed an assistant professor in physical chemistry at the Harvard Medical School. — WINTHROP A. JOHNS, *General Secretary*, 34 Mali Drive, North Plainfield, N.J. WALTER T. BLAKE, *Assistant Secretary*, Research Products Division, Pillsbury Mills, Inc., Minneapolis, Minn.

## • 1938 •

You men all know that at the 10th reunion we elected Arch Copeland President of our Class. Just to prove he's a good leader, his wife, Jo Ann, presented him with a baby boy on February 12, Jeffrey Reiss Copeland. This makes five for the Copelands; three boys and two girls. Congratulations Arch!

We have a letter from Dick Muther. Dick is going great guns with the Methods Engineering Council in Pittsburgh, Pa. For four weeks in January he was in charge of management conference at Pocono Manor in the beautiful Pocono Mountains of Pennsylvania. Sounds like a tough job. He writes that he saw Welles Wothen in Philadelphia in January. Welles was exhibiting a semiexpandable type of pallet for use in materials handling. It is produced in New York City, where he is located.

Chuck Donlan has been appointed one of two members at large of the Board of the M.I.T. Club of the Virginia Peninsula (Newport News). Philip Briggs is with the Talbot Carrol Company in Seattle, Wash., and Frank Wardwell has moved from Chicago to Louisville, Ky. He is with the American Air Filter Company. Bill Shamban reports that his new address is the W. S. Shamban and Company, in Los Angeles. If we are correct in assuming that this means that you have just gone into business for yourself, congratulations and best wishes, Bill.

We hope you all know by now that in the person of Don Severance, our Class has the honor of having the Secretary-Treasurer of the Alumni Association, and Don is doing a fine job. If business, study, or pleasure should bring you back to the Institute, Don would be very pleased if you would drop in and say "Hello." He is on the second floor in Building 7.

In order to stimulate the spirit of the Class, 11 districts are being set up in the country each with its assistant secretary. This man has a twofold job: First to create interest and renew friendships within the area by such things as class dinners in the winter or picnics in the summer; and secondly, to relay to the Class Secretary interesting news for class notes. This second item is quite important because we have complaints about the lack of class news in The Review, but those who complain don't think to let the Secretary know of a wife or children or a new job in his instance. This is a preliminary announcement and you will hear much more of this project. — ALBERT O. WILSON, JR., *General Secretary*, 32 Bertwell Road, Lexington 73, Mass. RICHARD MUTHER, *Assistant Secretary*, Methods Engraving Council, 822 Wood Street, Pittsburgh 21, Pa.

## • 1939 •

Although direct mail contact concerning our 10th reunion was attempted with the entire class roster late in March, anyone who has not received reunion information may do so by writing to the Secretary. The Mayflower Hotel in Plymouth, Mass., has been named the place and the time will be Saturday, June 18. Indications thus far are that there will be a large turnout and, we hope, a record attendance.

A Monsanto Chemical Company news release notes that Bernard Langton has recently been promoted to manager of intermediate sales. — A National Bureau of Standards release reads as follows: "Dr. Myer Kessler has been appointed to the staff of the National Bureau of Standards, where he will be concerned with microwave spectroscopy and molecular physics, including further applications related to the NBS Atomic Clock and other microwave developments. . . . Dr. Kessler was formerly a staff member of the Radiation Laboratory at . . . Technology from 1942 to 1945, where he worked chiefly on radar and microwave equipment, having previously — from 1940 to 1942 — been a research associate in biophysics at the University of Illinois. From 1946 to 1948 he was a graduate student at Duke University as a Frederick Gadner Cottrell Fellow in physics and was awarded his Ph.D. there. . . ."

Seymour Heymann, with the Stewart Warner Company, spoke recently at a meeting of the American Society of Mechanical Engineers in Cincinnati on "Selecting Aircraft Heating Equipment." — Among the engagements announced recently we find that of Mary Kathryn Van de Water to Ed Morin. The weddings recently announced have had for principals: Dorothy Caroline Heimburge and Ray D. Edwards, Jr.; Anne C. Pike and Ben Howes; and Marguerite Murtagh and Perry Crawford.

See you all at the "Tenth." — STUART PAIGE, *General Secretary*, 701 Mill Plain Road, Fairfield, Conn. ROBERT C. CASSELMAN, *Assistant Secretary*, 42 Holman Road, Auburndale 66, Mass.

## • 1940 •

Word comes that Otto Arnold is business manager and technical director of the new frequency modulation Station WBSM at New Bedford, Mass. Otto was engineer in charge of design and construction of the new broadcasting facilities for Station WNBH and formerly was affiliated with its sales department. He was an officer in the Signal Corps from 1941 to 1945 and holds a patent on an antijamming device for radar equipment. He was general engineering director of stations WFMR and WOCB until January. He supervised the construction and installation of equipment and designed the building and facilities for FM and AM broadcasting for the new station. — Announcement has arrived of the marriage of Patricia Sue Winter to Frederic W. Hammesfahr in February at Akron, Ohio.

Approximately one year from this time we should all be making plans, if possible, to attend the 10th anniversary of the Class. It is not too soon to start considering plans. The officers of the Class would like to have some of your ideas and suggestions for that occasion. Please do drop me a line with some constructive ideas for that 10th reunion of 1940. — H. GARRETT WRIGHT, *General Secretary*, in care of Garrett Construction Company, Main Post Office Box 629, Springfield, Mo. THOMAS F. CREAMER, *Assistant Secretary*, 6 Berkley Road, Scarsdale, N.Y.

## • 1941 •

Fred Coder and friends have just finished building their own houses and have appeared in the local papers at Haverhill for a job well done at a cost of $8,000 and a large quantity of elbow grease. Johan Andersen is also expending a good deal of grease at his home-town machine shop in Hopkinton, — quite a

place. Sexton, Andersen and wives spent a week in the skiing country around North Conway late in February. During the skiing it was learned that Dave Howard has recently become plant manager of an outfit in Weymouth, Mass., making artificial leather. Don Howard is still located up in Sherbrooke, Canada, running the Canadian branch plant of the Bemis Associates. The reports are that he is doing a fine job. John Sexton is working at Bemis at their Watertown plant. He really likes his job, refusing to give title to it, and states that he has one interesting problem after another. While sitting around North Conway, Jim Thornton came to mind and was obliged to pay for a collect call. Jim is working at the Downingtown Manufacturing Company, Downingtown, Pa., and is living at the Merion Cricket Club. John writes on: It was around Christmas time that I last saw Howie Morrison. He is working for a subsidiary of Union Carbide and is living in New York City. He seems to yearn for the hills of New England. I had to spend about eight hours in Philadelphia recently. As I got off the train a big guy grabbed me; it was Bob DeMartini and I hadn't seen him since the day we graduated. Bob is working in the textile development section at General Electric. I got a long letter from Frank Storm saying that all is well in Amarillo. He has just bought a house and is chief engineer of the Cannon Gasoline Company, which produces natural gasoline and gases. Life in Hopkinton is better than ever. I am running for a political office-planning board here in town elections." Good luck, John.

On the marital front Ruth Hathaway is engaged to Robert Wallace Blake. Ruth served as a WAVE during the war and Bob as an ensign in the Naval Air Corps. Jacqueline Crandall is engaged to Robert Fano who got his Ph.D. from the Institute and is now an assistant professor in the Electronics Laboratory. Commander Sherman Betts is at the Industrial College in Washington. John Sykes has left New Jersey for Petersburg, Va. Charles Sauer has recently received his Ph.D. at the Institute. Lieutenant Commander James Neighbours is now stationed in Corpus Christi, Texas. Arthur Martin is now working in Wilmington, Del. Two former westerners have come east; Charles Lalumia to Providence, R.I., and Leland Lyons to Fords, N.J. Dave Herron is at the Harvard Business School. Ted Guething has left Detroit and moved a short way to Birmingham, Mich. Bill Compton has left California and is now working for the U.S. Plywood Corporation in New York City. Jim Cullison is still out in California.

We are looking forward to seeing you at the eighth reunion in June. — STANLEY BACKER, *General Secretary,* 101 Providence Road, Primos, Pa. JOHAN M. ANDERSEN, *Assistant Secretary,* Saddle Hill Farm, Hopkinton, Mass.

## • 1942 •

Jerry Coe, our Class President, writes that he and his wife are settled in Schenectady, having bought a house there. They have a child, Wendy. Jerry is doing chemical process development work at the General Electric silicone plant at Waterford, N.Y., under C. F. Reed, now engineering manager of the chemical department, whom the Course X and Course XV-2 boys may remember. Jerry sends his greetings to the Class and hopes that you are all prospering. He wants to thank Jack Sheetz for carrying on as class secretary after Warren Loud left and welcomes me to the job. I agree with Jerry in acclaiming the work Lou Rosenblum has done in keeping up the 1942 record in the Alumni Fund each year. This is a good time to express publicly the appreciation of the President and the Class. Jerry concludes with best wishes and a plug for me to the effect that you all should let me know what you are doing. Thanks, Jerry.

A reunion-fiesta was held in some town to the southwest of here. Among those present were: David Nichinson, Kollsman Instrument Company; Bernard Levere, Ginsberg Machine Company; Mark Kravitz (with wife, Margie Siff Kravitz 10–44); Marvin Epstein'44 (with wife, Erma), Columbia University; Alan Katzenstein; Lou Rosenblum, Polaroid Corporation; Bob Kraus, Edo Corporation; Bob Greenes, Public Fuel Service Corporation; Harvey Kram, Leviton, Inc.; Dick Seidman, Development Engineering Company. — GEORGE M. KAVANAGH, *Acting Secretary,* Room 4–055, M.I.T., Cambridge 39, Mass.

## • 1943 •

We extend our congratulations and heartiest best wishes to Bob and Susan Lichten upon the birth of their nine-pound son, John Harold, on March 5. The Lichtens live in Kenmore, N.Y., at 129 Kenview Avenue.

On January 29, Jean Beecher German and Richard E. Henning were married at St. Ann's in Back Bay, Boston. On the same day the wedding of Mary Theresa Fallon and John M. Fiore took place in Newark, N.J. Dick Henning's bride's home is in Brooklyn, N.Y., and she graduated from Wellesley College in 1948. Dick, a lieutenant in the Navy, is currently studying naval construction and marine engineering at M.I.T. The couple will live in Waltham, Mass. The Fiores who were married in St. Catharine's Church in Newark, will presumably also live in the Boston area since Mike is studying at Technology for his master's degree in Electrical Engineering. They spent their honeymoon somewhere in the Poconos. — Ellen Gallishaw's parents have announced her engagement to James J. Faran. Ellen formerly lived in Cambridge, Mass. She is a graduate from Radcliffe, and the prospective groom is now studying at Harvard.

From Seattle, Wash., I have word that Fumio Yagi is a professor of mathematics at the University of Washington. After getting his bachelor's degree at this university, he received a fellowship to Technology in 1941, permitting him to work on his doctorate which he received in 1943. Following graduation he spent several months at the Institute of Advanced Study in Princeton. During the war he served in a Japanese language unit in the Army. Another man who makes the news is Richard LeB. Bowen, Jr. He is the co-author of a paper with Austin H. Clark of the Smithsonian Institution which reports the discovery of two hitherto unknown echinoderms in the Persian Gulf. You may know what these things are, but I didn't, so I looked the word up in Webster's Dictionary. Although I was glad to see that the lexicographer had recorded the word, I am none the wiser because the definition given describes these things as "marine animals of a phylum (Echinodermata) consisting of starfishes, sea urchins, and their allies." You'll have to take it from there! All kidding aside, though, Bowen found these creatures while he was working as a chemical engineer for an oil company in Saudi Arabia two years ago. Apparently Bowen is the first person to make any archaeological studies in that part of the world because the local authorities have forbidden the entry of archaeologists into the area. Trust a chemical engineer to get around that little difficulty! He will publish his archaeological findings soon. — CLINTON C. KEMP, *General Secretary,* 29 Verlynn Avenue, Hamilton, Ohio.

## • 1944 (2-44) •

Plans for our big fifth reunion on Friday, June 10, at the Campus Room of the Graduate House are beginning to jell. A letter from Sten Hammarstrom informs me that he will be able to take over the chores of master of ceremonies for the evening. We are anticipating a large turnout of approximately 150. There will be a short meeting at this time to discuss the matter of inaugurating a class insurance program similar to that organized by preceding classes.

Sten is working for the Republic Flow Meters Company with the aim of becoming a sales engineer. He is located in Detroit, Mich. Lee Stanley is with Standard Oil in Whiting, Ind. Bill Clark'47 was up to the Business School last week and I understand that he is considering coming to Harvard. Bill is with Standard Oil of New Jersey. Herb Knape called me up on his way through Boston and I found out that he was on his honeymoon. Herb is working for a machine tool company in Grand Rapids, Mich., and likes the environment very much.

Once again I would like to suggest that those of you who have not changed your affiliation back to the Class of 2–44 be sure and do so. We want to have all the R.O.T.C. men whose educations were interrupted by the war to join our ranks once again. This detail can be done easily by just dropping a short note to the Alumni Office stating that you wish to be connected with your original class.

Latest changes of address indicate that Trigg Noyes is in San Jose, Calif.; Don Phillips in Evanston, Ill.; Harold Rambusch at Floral Park, Long Island; and Jim Ruoff at Rochester, New York. — WILLIAM B. SCOTT, *General Secretary,* Mellon C-41, Harvard Business School, Boston 63, Mass. MALCOLM G. KISPERT, *Assistant Secretary,* Room 3–208, M.I.T., Cambridge 39, Mass.

## • 1945 (10-44) •

Our first five-year reunion will be a dinner on Friday evening, June 10. Thanks to Jim Angell, we have reservations for

this class feast in the private dining room of the Hotel Sheraton. The prices are fine, too, approximately $3.50. All reservations should be sent in soon to Jim at the Graduate House. Hotel space will probably be scarce that week end. Jim would, I'm sure, be glad to get your room reservations if you write soon. Why not ask him to take care of both dinner and room details in your next letter?

Has anyone heard how the Class has been doing in the Alumni Fund? Carroll Boyce tells me it is a low low among many highs; the same as last year. Even token contributions of $5 would help greatly to show our class's appreciation of dear Technology.

The latest engagements include: Helen Mary Hannan of Pennsylvania State College to Hank Tillson; Anita Ornsteen to Les Brindis; Ilah Neill of Wellesley College to Bruno De Paoli, Jr.; Marilyn Gay of Brockton School to Walt Gray; and Nancy Van Arden of Briarcliff Junior College to Tom Lawson. — Marriages: Joan Wolf of Pennsylvania State College to Al Parsons (6–45); Lucille Plasman of Middlebury College to Paul Grosse; Martha Pascale of Katherine Gibbs School to Leavitt Pope; Muriel Cohn to Harold Simmons; and Sheila Veliher of Punahou School, Honolulu, to Ensign Jack Walsh. — The Warren Harwicks were recently amended by the addition of Warren, Jr. The Jim Healys were similarly expanded by the arrival of Eileen.

A personal visit is worth more than many thousands of words. I do hope you will be able to attend the coming mass personal visit, our five-year reunion on June 10. — JAMES S. MULHOLLAND, *General Secretary*, Reinhold Publishing Corporation, 330 West 42d Street, New York, N.Y. *Assistant Secretaries:* RODERICK L. HARRIS, 2873 South Buchanan Street, Fairlington, Arlington, Va.; JAMES B. ANGELL, M.I.T. Graduate House, Cambridge 39, Mass.

## • 1945 (6-45) •

The mailbag contained two letters from classmates this month. That makes it a 100 per cent increase over the previous months. Al Cohen and Charlie Patterson were moved to send in a report on their whereabouts and whatfors. We are mighty glad to hear from them and we hope that one or two more (don't want to overdo it) might volunteer to account for themselves and their friends. Al reports that he did graduate work at the Lowell Textile Institute after leaving the Navy. In June, 1947, he and Debby Berger were married and moved to Lowell. He is plant engineer and superintendent of his fathers plant there, the Suffolk Knitting Company, and enjoying it very much. He has the following news about others of the Class. Gene Rubin and his wife, Arlene Davidson, have moved into a new apartment in Waltham. Gene is doing a grand job in the research department of the Supersonic Laboratory at Technology working on the design of missiles and their test in the new Supersonic Wind Tunnel. He was recently in Washington as technical advisor to an important meeting. Also connected with the Wind Tunnel experiments is Leon Schindel. He was married to Beatrice Bernstein of Brookline in January and is now living in Belmont.

Marty Walzer and his wife, Marilyn Meister, are living in Brookline. He will finish Harvard Law this June and is moving to Larchmont, N.Y., to practice patent law in New York City. George Berman is still a bachelor and is enjoying life at Harvard Business School. Ben Cohen is with his father as manager of Cohen, Inc., in Glen Cove, L.I., selling Chrysler automobiles. Jim Barrabee received his degree last year after being with the Navy in the Pacific. He and his wife, Marcia, are in Ohio where he is in the International Harvester training program. Bill Loeb and his wife are living in Philadelphia where he is connected with the De Laval Steam Turbine Company. Bill presented a paper on the "Supersonic Compressor" at the New York meeting of the American Society of Mechanical Engineers in December. It is scheduled for publication in the March issue of the *Journal of Applied Mechanics.*

Charlie Patterson writes that he is with the Spencer Thermostat Company. Since 1946, he was working in the laboratory and sales department in Attleboro. He has recently moved to St. Louis to take over as field engineer of the St. Louis territory. He reports having met Dick Jorgenson at a heating and ventilating show in Chicago. — I am looking forward to receiving a letter from each one of you and hope to see many of you on Alumni Day. — DAVID P. FLOOD, *General Secretary*, 57 Beech Street, Framingham, Mass.

## • 1946 (2-46) •

Although this is an interim edition of class notes, your Secretary wishes to give whatever news there is along with a hearty greeting to the old and new readers of this chronicle. Having been informed of the wide circulation of this issue of The Review, your Secretary feels that it provides a great opportunity to preview future class doings.

In the line of news, Roger Bart and Elaine Bickford'45 of Belmont were married in Arlington Street Church on January 29. Roger received his master's degree in Chemical Engineering last year and is doing work for a doctorate degree now. Elaine is also an Institute graduate with a master's degree and is now an instructor in chemistry at Simmons College. Jim Hawthorne and Patricia Cutler were wed in Greenwich, Conn., on February 19. Jim is an ensign out of the United States Naval Academy, 1947, and he and his wife will live in Glenville, Ill., where he was recently assigned to duty.

Herb Hansell and Ned Tebbetts completed their whirls at higher education in February. Herb was graduated from the Yale Law School and is in limbo temporarily while Ned is back at John Hancock with a master's degree in statistical analysis from the University of Michigan. Ted Heuchling took a little trip up in the hills around the first of the year to do a little skiing, had a little trouble, and has been the not-too-proud owner of a pair of crutches. This mishap brought to a screeching halt the Heuchling-Craig semi-monthly squash matches. Bob Spoerl is a project engineer for the E. B. Badger Company and is now helping to erect a petroleum refinery in South Paulsboro, N.J. Incidentally, Bob is living in Woodbury, N.J., at 309 Cooper Street. Ensign Harland Gray was spotted in the Beantown area, recently, where he was found to be taking a course at the Radar School.

As has been announced before, a directory compiled by Herb Hansell and your Secretary will reach you in the not-too-distant future. Classmates are moving around so much that it will be a little out of date even when you first receive it, but we hope that by sending out supplements from time to time it can be a handy and useful address guide. On the basis of a rather overwhelming vote in favor of a five-year reunion, plans are being made for a class get-together at the Institute in June, 1951. Preliminary information on this is being sent in a letter accompanying the directory and more details will follow as the plans congeal. Keep this future date in mind and as the time approaches and you feel that you are not receiving the data on the reunion, write to either your Secretary or Herb Hansell. — JAMES S. CRAIG, *General Secretary*, 387 Harvard Street, Cambridge 38, Mass.

## • 1946 (6-46) •

A quick census of the 6–46 men now at Technology reintroduces the following classmates. Victor de Mello, I, now a research associate in the Civil Engineering Department, has remained at the Institute after receiving his bachelor's degree in June of 1946 and in the intervening time received his master's degree in September, 1946, and his doctorate this February. Bob Gardner, II, now on the staff of the Division of Industrial Coöperation at Technology, worked for Jackson and Moreland, consulting engineers of Boston, doing a bit of power plant design for a year after graduation and then came to the Institute to spend full time in combustion research.

Pao Mei Pan, VI, of Hong Kong, China, now doing research work in the field of electrical transients, left for Ohio State University after receiving his master's degree here in 1946 and then returned to M.I.T. in 1947 as a special student. Frank Verzuh, another Course VI man, now a research associate in the Electrical Engineering Department, has been at the Institute since receiving his master's degree in 1946 and has been variously occupied in designing computing machines, teaching mathematical analysis by mechanical methods, operating an I.B.M. and working towards a doctorate. Frank has recently become a member of the American Association for the Advancement of Science. Both of the above, although no longer bachelors academically, are still bachelors socially.

John Gautraud, still another Course VI man, is an assistant electrical engineer at the Institute. Jim Church, XIII, now approaching a master's degree in June of this year, went on inactive duty in 1946 and put in two years at the Ingalls shipyard in Pascagoula, Miss., doing technical and design work, and then came East last

year. Jim, apparently the only married 6–46 man now at Technology, was married to Mary Kelleher, registered nurse, of Roxbury in 1947 and now brings a son back to Boston to aid in the homework.

Your reporter saw Ralph Krenkel, XVI, at the Institute at the beginning of the fall term but has not seen him recently. Class President, Dave Black, VI, now an engineer for American Telephone and Telegraph, came back to Technology for the Convocation and Inauguration of President Killian'26. I have heard that John Serrie, XIII, top track star in 1945 and 1946, is now out of the Navy and is living in the state of Washington.

This inaugural news can be continued if the class members will send a post card to the Class Secretary or to the undersigned. — JAMES W. CHURCH, *Acting Review Reporter*, 103 Quincy Street, Roxbury 21, Mass.

## • 1947 •

After glancing over the rest of this issue, I believe that you will agree with me that the Convocation and the Inauguration of our new President was one of the biggest milestones in M.I.T. history. Unfortunately, the attendance of members of the Class of 1947 was noticeably small so there was no opportunity for even a petite reunion.

The New York *Herald Tribune* narrates the fact that Sumner A. Long has been appointed as a partner and managing tanker director of the newly formed Lincoln Ship Brokerage Company, Inc. Huey, who graduated from the United States Merchant Marine Academy before entering the Institute, recently had resigned his position as director of the tanker chartering department of Ocean Freight and Brokerage Corporation.

The song, "Little Jack Frost Get Lost," seems to have a particular significance for 1947, for I have only four wedding announcements to report this month. Bob Danner married Virginia Harlow in New York City; John Reddersen wed Margaret Sampson of Belmont; Bill Duncan exchanged nuptial vows with Katherine Jones of Philadelphia; and Robert Buegler wed Marion Doherty of Jamaica Plain in February. Engagements this month are those of Frank Barry to Patricia Norton of Vineyard Haven, Mass., (the wedding will take place in June); and Herbert Anderson to Marjorie R. Swan of Milton.

Perhaps many of you read the interesting article in the New York *Herald Tribune* of December 29 entitled, "Pakistan Looks Ahead!" The article relates the observations of a young Pakistani, Ahmad Nawaz on his return home after four years in America. Ahmad is a member of one of the Punjab's most distinguished families. His grandfather, the late Sir Mohammed Shafi, was for many years a leading Indian statesman. His mother, the brilliant and beautiful Begum Shah Nawaz is a member of the West Punjab Legislative Assembly and has been in the forefront of many progressive political movements. His sister, Shah Nawaz, who was killed in an air crash last year, was a writer, poet and a zealous worker in the movement which brought Pakistan into being. Ahmad hopes now to take his place in this constellation. With your permission, I'd like to pass on a few of his more pungent quotes: "I've picked up a lot of ideas in America which I'd like to see translated into action in Pakistan right away — but they can't all be because things move slowly in the East, and not everybody is as impatient as I am. Perhaps I learned impatience too in America. . . . Another idea I picked up in America was the idea of religious equality. Here in Pakistan we officially claim to be a secular state, yet we are in fact a Moslem state, still influenced by the demands of a strong orthodox element — so strong that no one dares to speak in public in favor of secularism. Luckily I'm a scientist and not a politician, so I can afford to say what I think. . . . The trouble with education here is that the professors are required to teach by a syllabus which may be decades out of date, for it requires action by a dozen committees to change a single word in the syllabus. Once, when a chemistry professor was reading from a 1923 syllabus, I saw several of the pages crumble into dust! And do you know that they're still teaching here that an atom has no neutrons? . . . In America, to my amazement, I found that people who worked physically hard were admired for their industry. And I found that if my monthly check didn't come from home on time, I could wait on tables or shovel coal, and no one thought the worse of me. In America an engineer will get into overalls and do the dirty work himself; in Pakistan (and India) he usually stands by in a Western business suit and directs a menial to use a wrench or turn a valve. I'd like to see us all get into overalls. . . . American girls are 'wonderful people.' There seem to be two kinds, the playgirl who is always looking for a good time, and the home-making type who wants to get married and settle down. The first kind are fun but the second kind are the most wonderful girls in the world." Politely, Ahmad has only one criticism of America; it's too hard to get laundry done. We certainly hope that Ahmad returns to M.I.T. for our 5th-year reunion. He is one of our foreign classmates that we'd like to know better.

Hope you fellows will jot me a line now and then so we can bring the rest of the Class up to date on your whereabouts and activities. — JAMES L. PHILLIPS, *Acting Secretary*, Room 7–133, M.I.T., Cambridge 39, Mass.

## • 1948 •

Ted Bernard of the Boston office of the Northwestern Mutual Life Insurance Company, which is handling our gift-insurance plan, reports that answers to Dave Cist's letter are coming in rapidly. He says that the number of "yes" returns is high and that a continuation of the present returns will insure our goal of presenting a large gift to the Institute at the time of our 25th reunion. This plan, whereby we assign to the Institute the dividends on a regular $1,000 policy which offers us permanent protection seems like the most painless way of making a generous class gift. This plan and the Northwestern Company are endorsed by Horace Ford, Institute Treasurer, who is trustee of the assigned dividends which he receives yearly. If members of the Class have any questions about the benefits of the plan, they should be addressed to Ted Bernard at the Northwestern Mutual Life Insurance Company office, Boston, Mass. A specimen copy of the policy may be obtained by writing to Mr. Bernard.

John J. Moran, Jr., a lieutenant, has been assigned to a 21-months' training course at the Springfield armory. The objective of his training is to prepare for the job of works manager, and it will be achieved by holding various jobs in the armory plus courses on arms manufacture and an opportunity to be in on anything outstanding and interesting that is done at the armory. Martin Billett has returned to the Institute on a textile fellowship after spending a few months in industry. He is aiming for a graduate degree and lives in the Graduate House. Joseph Luceri an electrical engineer, has just been transferred from the Lynn plant of the General Electric Company to the Pittsfield plant. George G. Mah, who holds a degree of doctor of philosophy in organic chemistry, has just joined the staff of the Du Pont Company's organic chemicals department. He is living at 17 Chestnut Street, Salem, N.J. A letter from Dave Cist tells that he is deep in the application of his servomechanisms knowledge to process control at Du Pont. He says that Du Pont has made quite an impression on him.

Engagements reported this month include: Marie Reardon to William Hart, Frances Moskowitz to Robert Friedman, Marion Fennessy to William Riordan, Shirley Stanwood to Charles Adams, and Pauline Hymoff to Martin Jacobson. Marriages include the following: Ena Evelyn Noyes of Smyrna Mills, Maine, and Simmons College to Charles Phipps, Jr.; Janette Bolton of Whitinsville and Bradford Junior College to Robert C. van Ravenswaay; Evelyne Alperin of Chelsea and Burdett College to Herbert Kurinsky; and Nancy Hanson of Melrose and Wellesley College to Wesley Hague.

The Secretaries wish to thank those members of the Class who have written letters about what they are doing. Only with help from all members of the Class can these class notes be an interesting means of communication. A slip and fall on a muddy street is sufficiently newsworthy to warrant a post card to the Secretaries. If you haven't written yet, please do so, and plan to do it a few times each year. — WILLIAM ZIMMERMAN, *General Secretary*, 1604 Belmar Road, East Cleveland 18, Ohio. RICHARD H. HARRIS, *Assistant Secretary*, 24 Gifford Drive, Worcester, Mass.

## ALUMNI DAY, SATURDAY, JUNE 11, 1949

**Your "once-a-year" chance to check up on the old gang and give the Institute a once-over.**

***HERE'S THE SCHEDULE:***

**FIRST—You register in the main Lobby under the great dome. Register your wife and children here, too. 8:30 A.M.-1:00 P.M.**

**SECOND—You visit friends and staff, or you have a look at what's new around the Institute. There'll be demonstrations of projects such as the Synchrotron, the Supersonic Wind Tunnel, and the Gas Turbine Lab. See the Rockwell Cage, and look over the progress on the Charles Hayden Memorial Library.**

**THIRD—You eat luncheon in DuPont Court. This is always a pleasant time with friends and family. 12:30 P.M.**

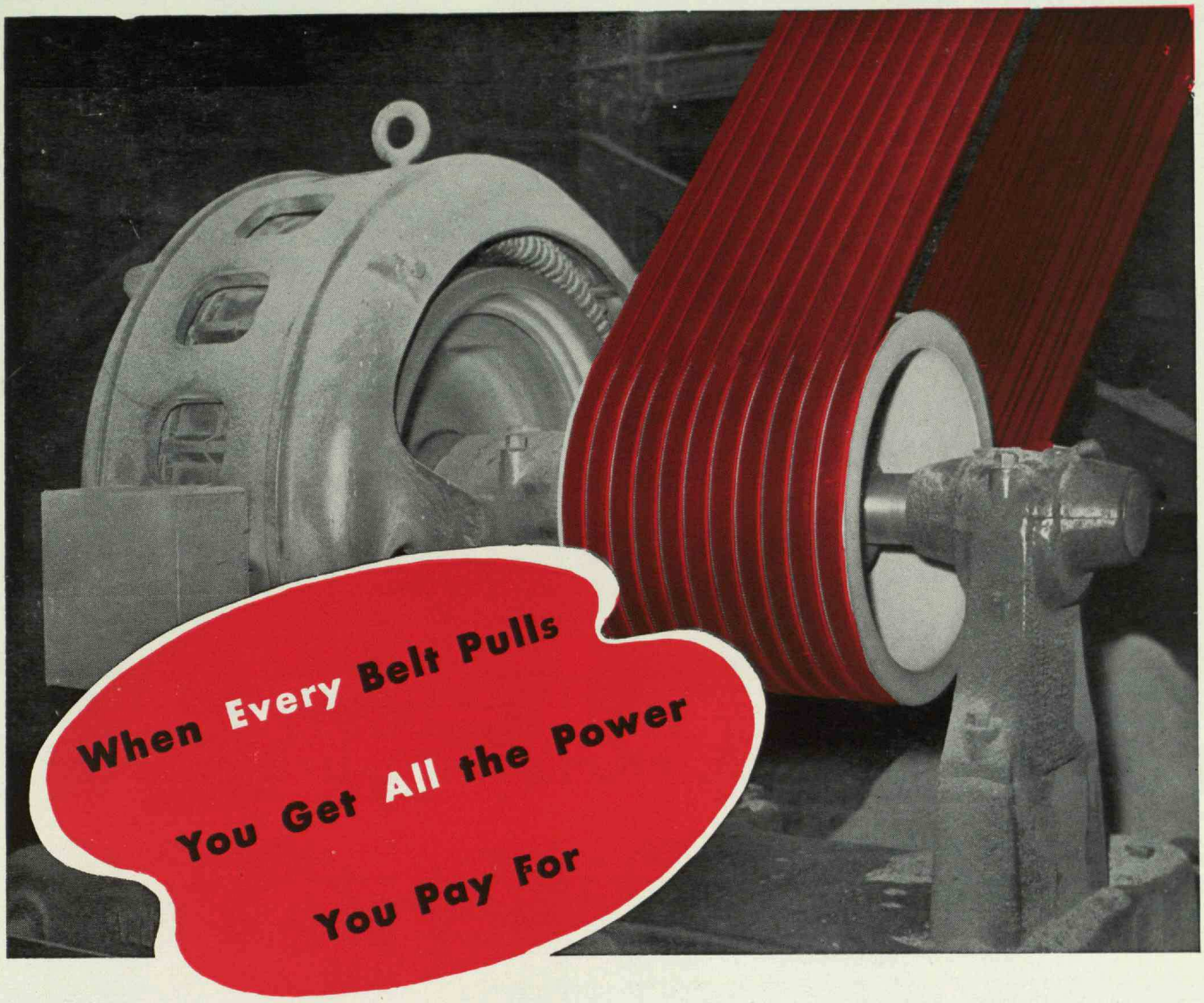
**FOURTH—You meet Dr. and Mrs. Compton and President and Mrs. Killian at a tea in the new Senior House. 4:00 P.M.**

**FIFTH—You gather with friends and classmates for informal reunions at the Statler. 5:00 P.M.**

**SIXTH—The grand Alumni Banquet, Hotel Statler. Make sure you're there to pick up your stein in person. 7:00 P.M.**

- **THERE IS A SPECIAL PROGRAM FOR THE LADIES**

- **If you are a member of a reunioning class (all classes ending in 4 or 9), contact your class headquarters.**




## Condor Whipcord V-Belts are Pre-Stretched

Uneven stretch in a multiple V-Belt drive overloads some belts while others ride slack. Power is lost and V-Belt life is shortened. Manhattan engineers have designed Condor Whipcord V-Belts to insure the most uniform team performance possible.

During manufacture, the stout Whipcord Strength Member, endless wound to form the load-carrying core of the belt, is pre-stretched. This Whipcord Strength Member is placed in the neutral axis area of the V-Belt and surrounded by heat dissipating, slow aging Flexlastics. Thus, the percentage of stretch is practically nil.

On your multiple V-Belt drives, every Condor Whipcord V-Belt wedges firmly in the sheave and delivers *all* the power you are paying for. Send for free engineering data applicable to your drives.

*Manhattan's line of rubber products for Industry is consistently dependable—outstanding in quality. Make MANHATTAN your choice.*

("Flexlastics" is exclusive with Manhattan)

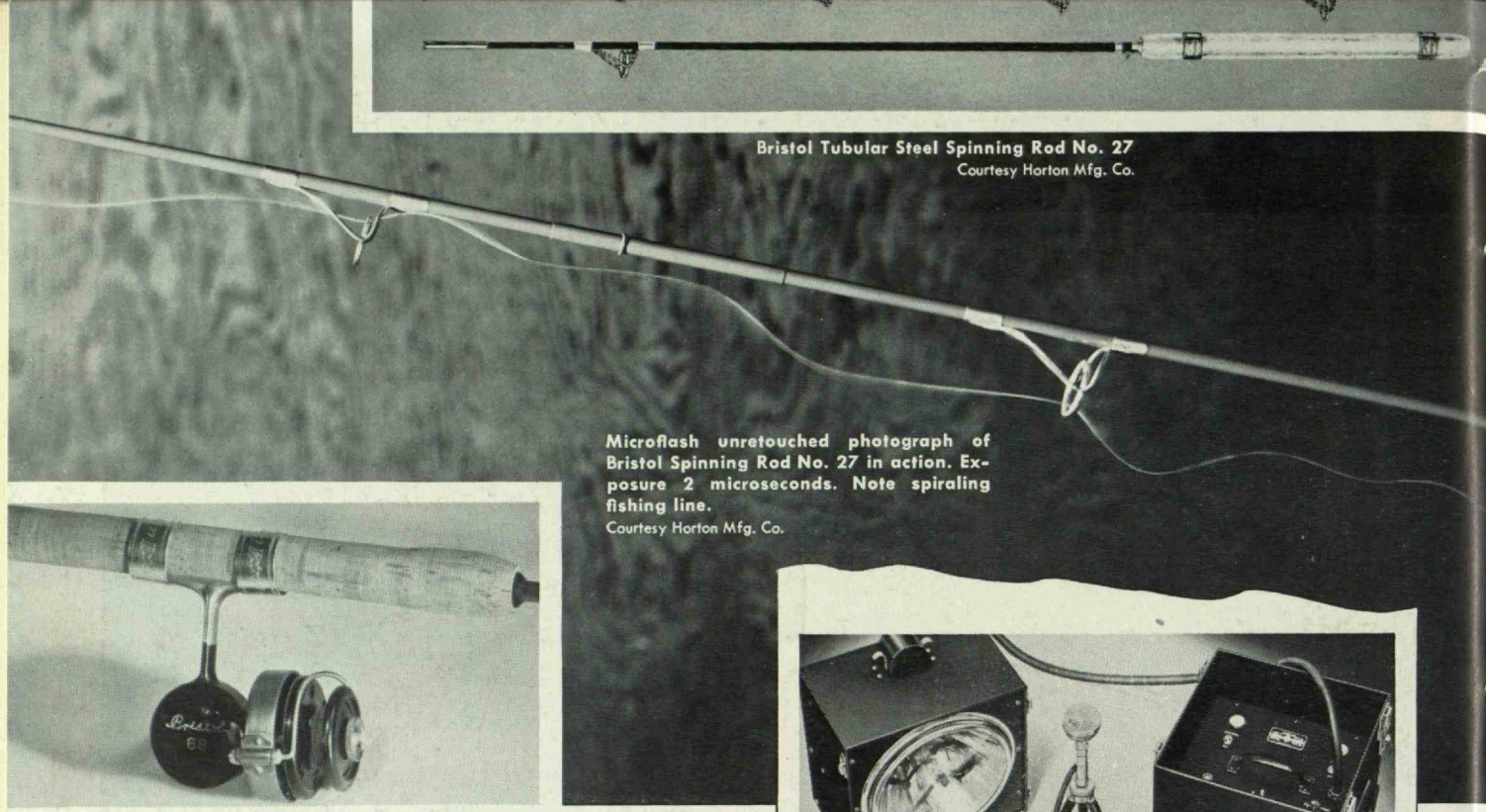
RAYBESTOS R M MANHATTAN

# RAYBESTOS-MANHATTAN INC.

*Keep Ahead with Manhattan*

**MANHATTAN RUBBER DIVISION** **PASSAIC, NEW JERSEY**

Thomas H. Boyd, '23 Wilder E. Perkins, '25 Charles P. McHugh, '26 Albert W. Beucker, '40



**Bristol Tubular Steel Spinning Rod No. 27**
Courtesy Horton Mfg. Co.

**Microflash unretouched photograph of Bristol Spinning Rod No. 27 in action. Exposure 2 microseconds. Note spiraling fishing line.**
Courtesy Horton Mfg. Co.



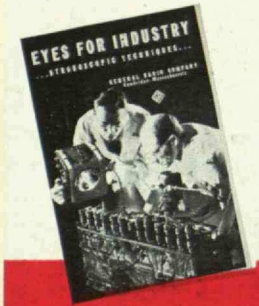
**Bristol Spinning Reel No. 69**
Courtesy Horton Mfg. Co.

# Microflash Proof that a Spinning Line Spins

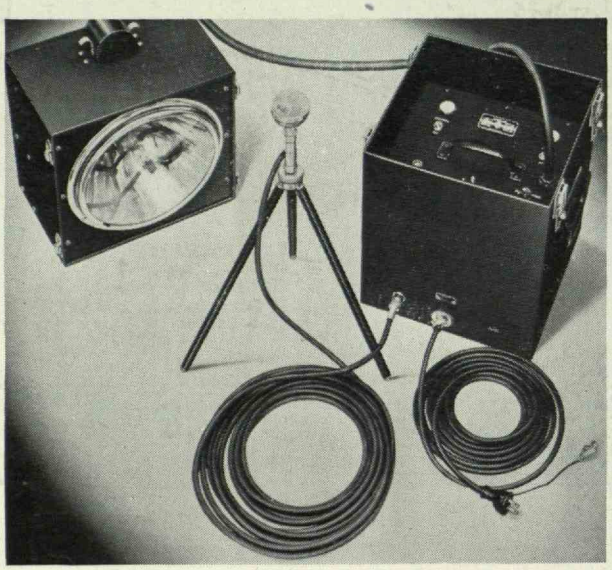
When the makers of the famous Bristol fishing rods produced a *spinning* rod and reel that promised a new high in the accuracy, ease, distance and pleasure of casting, they encountered the usual, "expert" skeptics. Did the fishing line really spin as claimed? The Horton Mfg. Co. believed that ultra-high-speed photographs might give the proof. So they wrote the General Radio Co. as follows:

> "It is our feeling that we will be able to show to the spinning experts for the first time exactly what action takes place as the spinning line leaves the reel and pays out through the *graduated* guides . . . and demonstrate the advantages of having graduated guides rather than the old type."

A series of Microflash photographs (of which one is shown) gave convincing evidence of the continuous spiraling, spinning motion of the line from the time it left the spinning reel until it passed through the last graduated guide on the end of the rod. It was evident that graduated guides (rather than the ordinary, small guides) were necessary to preserve the continuous, spiraling motion of the lines, to reduce friction and to prevent choking of the line.




*Write for your copy of 24 page manual of stroboscopic techniques "Eyes for Industry"*



## Microflash Does It Again!

This is one more example of the value of ultra-high-speed, stop-motion photography in industry and research. The Type 1530-A Microflash will stop cold any motion which does not exceed 2 millionths of a second in duration, including projectiles in motion, pressure waves in gases, mechanical distortions at high rotational speeds, turbulence in liquids and many others. The Type 1530-A Microflash can be used with conventional camera equipment, is portable and operates on ac.

### TYPE 1530-A MICROFLASH SPECIFICATIONS

***Flash:*** 2 microseconds.

***Power Supply:*** 105-125, 210-25 volts. 50 to 60 cycles.

***Power Input:*** 70 Watts.

***Accessories Supplied:*** Microphone, tripod, spare pilot lamp and fuses; 2 spare flash lamps, plug.

***Mounting:*** Power supply and trigger circuits in one metal case, the lamp in another. Cases lock together for travelling.

***Dimensions:*** 24⅛ x 13¼ x 11¾ inches.

***Price:*** Type 1530-A Microflash — **$600.00** plus current Federal tax.

# GENERAL RADIO COMPANY

**Cambridge 39, Massachusetts**

**90 West St., New York 6 920 S. Michigan Ave., Chicago 5 1000 N. Seward St., Los Angeles 38**